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|--------------------------|--|
| Title | A1 Morpeth to Ellingham dualling |
| What is being proposed? | Improve the A1 from Newcastle to Alnwick by upgrading two sections of single carriageway to dual carriageway |
| Senior Responsible Owner | [REDACTED] |
| Distribution | MP Delivery Services Director, MP Delivery Services Support, MP Delivery Services Senior Manager - Governance, Assurance and Quality, MP Programme Commercial Delivery Lead, Programme Delivery Director (as appropriate), Procurement Division - Procurement (Operational) for Major Projects, SES A-road Concept Delivery team |
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Business case for investment decisions £1m (including VAT) or above
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- Investment Decision [end to end process manual](#).
- [Guidance for tier 1 \(over £500m/novel or contentious\) projects](#)
- [Employee and other worker decision tree](#)
- [Investment submission template](#) (required for HE IDC)

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1. Executive summary

1.1 Why the proposed project is being undertaken?

This Outline Business Case (OBC) has been prepared to set out the case and justification for investing in the development of the A1 between Morpeth and Ellingham (M2E). This OBC represents the work completed in the Options Phase (Project Control Framework (PCF) Stages 1 and 2) and PCF Stage 3 of the Development Phase. It will demonstrate the ongoing validity and viability of the project, and that the preferred option meets the project's stated objectives.

The OBC is a live document that is updated throughout the lifecycle of the project. This latest update was formerly signed off in advance of the Highways England Investment Decision Committee (HE IDC) and Highways England Investment Committee (HE IC) submissions in November 2020, and has been produced in line with the government's five case Business Case model, which considers whether and how the project:

- is supported by a robust case for change that fits with wider public policy objectives (strategic case);
- demonstrates value for money (VfM) (economic case);
- is commercially viable (commercial case);
- is financially affordable (financial case); and
- is achievable (management case).

The OBC, which was presented to Highways England Investment Decision Committee (HE IDC) on 10 October 2018, for approval to contract the Regional Delivery Partnership (RDP) package, and has been updated to reflect the latest validated financial and value for money (VfM) position.

The A1 (M2E) project is considered a National Significant Infrastructure Project (NSIP) alteration project for the purpose of the Planning Act 2008, section 22. An "Alteration" NSIP is deemed to be most appropriate, as it covers projects where land is being developed outside the existing highway boundary. A Development Consent Order (DCO), therefore, will be submitted to secure the necessary approvals to proceed to construction.

1.2 Strategic context and key performance indicator (KPI) contribution

1.2.1 Strategic Case

Road investments to the A1 in Northumberland have the potential to deliver improved connectivity on this route of strategic importance in the east of England. The project has the potential to deliver significant economic benefits to the region through improvements to journey time, reduced vehicle operating costs, improved safety, greater journey time reliability, and reduced delays. There is significant political will for intervention, backed by local support, for full dualling of the A1 in Northumberland. To deliver the full dualling would exceed both the allocated project budget and be in exceedance of scope, as announced in the Road Investment Strategy (RIS).

In 2017, the Secretary of State for Transport (SofS) publicly reaffirmed the government's commitment to dual the A1 to the Scottish border.

The strategic case for intervention is based around the delivery of the following objective - To provide a dual carriageway layout to Ellingham, linking the Morpeth and Alnwick bypasses, creating a continuous dual carriageway from London in order to:

- Improve journey times on the route of strategic national importance
- Improve network resilience and journey time reliability
- Improve safety
- Maintain access for local traffic whilst improving conditions for strategic traffic.
- Facilitate future economic growth
- Avoid, mitigate and compensate for potential impacts on the natural and built environment, and identify opportunities to provide a long-term and sustainable benefit to the environment

In Autumn 2014, the government announced the first RIS, which included a £290m package to improve the A1 in Northumberland as part of a national investment of £15 billion into England's motorways and major A roads. The investment package recognises that the A1 in Northumberland 'needs substantial improvement to meet the needs of the local economy and to better fulfil its role in the national transport network. The A1 in Northumberland forms part of the wider strategy, to create a continuous high-quality dual carriageway from Newcastle to Ellingham.

The RIS 2 description states the following for A1 Morpeth to Ellingham (M2E) dualling – upgrading multiple sections of the A1 to dual carriageway to provide continuous high quality dual carriageway from Newcastle to Ellingham, north of Alnwick.

Although M2E is a single project, the original proposal was to submit two separate DCOs: one for the Morpeth to Felton (M2F) section and one for the Alnwick to Ellingham (A2E) section. This was because there was going to be a significant time difference between the construction of the two sections. However, due to issues that had to be resolved on the M2F section, which delayed its progression, that time difference has diminished to such an extent that proceeding with separate DCO submissions no longer makes sense. The decision was taken to submit one DCO application for the project, entitled A1 Morpeth to Ellingham, to the Planning Inspectorate (PINs), which was submitted on 6 July 2020.

This project is currently in the Development Phase of HE's PCF. The OBC demonstrates the ongoing value and viability of the project to meet its stated objectives. The project is currently in PCF Stage 4 (Statutory Procedures and Powers). Stage 3 was completed in July 2020 with a single DCO submission at the end of the stage.

1.2.2 Alignment with the RIS and Delivery Plan

Improvements to the A1 in Northumberland have been long sought after. The 1998 Trunk Roads Review highlighted the need to address safety issues on the A1, particularly on the single carriageway sections north of Morpeth. In 2000, a multi-model study was commissioned on the A1 north of Newcastle to the Scottish Border. Published in 2002, it recommended the upgrade to dual carriageway between Morpeth and Felton and Adderstone and Belford as two projects in the 2003 Government's Targeted Programme of Improvements (TPI). However, these projects were not included in the Regional Transport Board's recommendations for transport improvements in the region over the next ten years. Following this, in 2006, the projects were classified as 'not being progressed' in the Highways Agency's (HA) Business Plan for 2006/07.

In 2014, the Highways Agency (HA) commissioned Jacobs to undertake a feasibility study considering the A1 north of Newcastle between its junction with the A19 at Seaton Burn and the Scottish border. Four delivery options were considered with the production of an economic feasibility study, which is further elaborated in the economic case. It found that the dual carriageway sections of the route perform much better in terms of speed (and thus journey times), resilience and safety. Given that traffic volumes reduce considerably on northern sections of the route, it is clear that investment is a higher priority on the

southern sections. This led to the announcement of the £290m improvements to the A1 in Northumberland in the RIS in 2014.

Longer term, the government has a vision to upgrade the full route to dual-carriageway standard and will continue to examine further investments in future road investment strategies. In early 2017, the Secretary of State for Transport reaffirmed in the press the aspiration for the full dualling of the A1 to the Scottish Border.

1.2.3 Delivery Plan Update

In June 2019, following formal completion of the Change Control process, the Secretary of State (SofS) accepted a missed commitment to Start of Works (SoW) by 12 months from the original commitment of 2019/2020.

Since then, as explained in Section 1.2.1, the decision was taken to combine the M2F and A2E sections into a single combined DCO submission. This was communicated to the local MPs and key stakeholders in March 2020.

The Delivery Plan, which was published on 21 August 2020, now reflects a revised SoW commitment of Q2 2022/2023 with an Open for Traffic (OfT) commitment of 2024/2025.

1.2.4 Project Objectives

The RIS description states: A1 Morpeth to Ellingham - upgrading multiple sections of the A1 to dual carriageway to provide continuous high quality dual carriageway from Newcastle to Ellingham, north of Alnwick.

The project objectives have been identified in line with addressing the agreed problems and are set out below:

- **Resilience** – The current lack of safe over-taking opportunities and high volume of HGV traffic, as well as driver frustration and high frequency of junctions and accesses, creates more potential for vehicular conflicts leading to reduced journey time reliability. Providing an additional lane on the A1 in this location will improve network resilience by providing more capacity on the network, which will enable the network to recover more quickly to normal levels of service following an incident. It will also provide an extra lane that can be used in the event of a break down or blockage to ensure that traffic can continue to flow. This additional capacity will also minimise disruption when future maintenance activities are undertaken, where a lane closure would be required. Providing a dual carriageway will provide earlier and safer overtaking opportunities for vehicles looking to overtake slower moving vehicles. The de-trunked section of the A1 will also provide an alternative route that vehicles making local journeys can use.
- **Journey Times** – The project is forecasted to have a significant beneficial impact on journey times enabling a reduction in travel times along the route.
- **Accessibility** – The junctions have been designed to current relevant standards and the project includes clear signage to guide drivers. Four new grade separated junctions are to be provided as part of the project, which will remove turning conflicts. The reduction in junctions and private accesses directly accessing the A1 removes potential vehicle turning conflicts and the de-trunked A1 will provide an alternative local route for some of the local vehicles. Local traffic will also benefit from the additional capacity on the highway network, as well as the replacement of

private means of access onto the A1 with more reliable access onto the wider road network.

- **Safety** – A COBALT assessment forecasts that the project will provide an accident reduction benefit of £32 million and that the project will save 414 accidents when compared to the ‘without project’ scenario. The project includes relocation of bus stops, which will improve visibility at junctions and, therefore, safety of users. The project also includes some changes to public rights of way, including diversions that will reduce the risk of accidents for walkers, cyclists and horse riders on the route.
- **Environment** – The project is designed to mitigate the environmental impacts by incorporating improved landscaping, water management and maintain the air quality status. There are 2 Noise Important Areas (NIAs) along the route. The proposed noise levels at NIA 10002 will be reduced by a least 10db and noise levels at NIA 1003 will not increase.
- **Economic Growth and Development** – The strategic case for the project is that it will contribute to a continuous, high-quality dual carriageway north of Newcastle to the Scottish border. The project is located in the North East where productivity is the lowest of any region in England at £20,129 gross valued added (GVA) per head, whilst the region simultaneously receives the third lowest government capital spending per head at £700.

1.3 Explain how the proposal will achieve value for money

The business case for the project is predominantly based on the desire to have a continuous, high-quality dual carriageway north of Newcastle to facilitate future dualling aspirations to the Scottish border. This is expected to encourage economic growth in the region and improve the resilience of the network.

A RDP Estimate was approved in September 2019, and this estimate was used to provide an updated Benefit Cost Ratio (BCR) and value for money (VfM) statement for the project in advance of SGAR 3 and the DCO submission. The VfM statement and Analytical Assurance Statement (AAS) presented in the OBC at SGAR 3 in July 2020 and prior to submission of the DCO, gave a BCR of 0.8 representing **Low** VfM.

An updated RDP Estimate was produced in March 2020, which increased by £77.1m, from £261.6m (Sep 2019) to £338.7m. The project team were asked to carry out further traffic modelling work, the aim of which was to improve the quantified benefits. This work is set out below:

- Quantify the benefits of raising the speed limit for overnight and weekend traffic, and reduced congestion in the August seasonal peak.
- Review Greenhouse gas dis-benefits by incorporating the ‘Emissions Factor Toolkit to accurately reflect vehicle fleet, based on Department for Transport (DfT) forecasts.

Following this work, the BCR was updated and a revised VfM statement and AAS were produced. These can be found in Annexes **A and B** alongside the Waterfall Chart in **Annex C**. The BCR increased to **0.95**, however, the overall VfM rating for the project is now **Poor**.

Table 1 - PCF Stage 4 BCR and VfM based on last approved RDP Estimate

| Description | Morpeth to Ellingham |
|--------------|----------------------|
| RDP Estimate | £338.7m |
| BCR | 0.95 |
| VfM | Poor |

The updated AAS has been produced by HE Environment Transport Planning Group (TPG) and HE Commercial, alongside an overall AAS produced by TPG can be found in **Annex B**. The overall rating is **Amber/Red**.

The current level of analytical assurance is **Amber/Red**. With regards to the Red assurance for the Environment aspects, as shown in the Analytical Assurance Statement (AAS), there is an action plan in place to address the issues raised. This has been reviewed by SES and, once the action plan has been completed, the assurance will be reviewed and a new AAS will be produced. It is expected that completion of the action plan will improve the AAS. SES will review the outputs of this once the actions are completed and will review the AAS as appropriate. However, the analysis must be finished before the completed updated products can be assured and this will only happen after the HE IDC and HE IC meetings in November.

With regards to the Air Quality Impact Assessment required for the River Coquet Bridge woodland area, SES, the project team & HE's legal advisors, DLA Piper, are aligned on the 'Maintain' status. All parties agree that we have undertaken a robust assessment with regards to Air Quality effects, however, the Air Quality/Biodiversity impact assessment has not yet been agreed with Natural England. Natural England has advised that the woodland area should hold a 'Restore' status, and the impact of this is that it changes the assessments to having a significant Air Quality impact. The risk is that whilst HE can present a robust case it may become the Secretary of State's final decision based on recommendations from the Planning Inspectorate.

1.4 Commercial (covering procurement)

The commission for the Options Phase for the project was awarded to Jacobs through the Project Support Framework (PSF). The PCF Stage 2 task order included Highway Design, Environmental Impact Assessment and Transport Planning Services.

In March 2018, the project received approval to move into the Development Phase and was granted funding for PCF Stages 3 and 4.

Following the Regional Investment Programme (RIP) regional allocation for Collaborative Design Framework (CDF) lot 1 suppliers, WSP were allocated PCF Stages 3 and 4 for the project. Construction advice to inform the DCO application for the project is currently being provided by WSP through their sub-consultancy agreement with Morgan Sindall.

In 2017, HE Investment Committee (HEIC) and the DfT Board Investment and Commercial Committee (BICC) approved the RDP procurement strategy. The strategy was for "*Highways England to lead a generational shift in how highways and infrastructure schemes are developed and deliver successes*". Bespoke to HE, the RDP strategy is designed to deliver "industry leading" principles, HE imperatives and benefits including: integration, efficiency, predictability, outcome benefits focus and encourages value based decision making.

At the Capital Business Review (CBR) meeting in June 2018, the strategy to secure funding approvals was supported for RIP to submit 18 HE IDC papers covering 37

projects through a programmatic approach. This submission requested approval of 3 project allocations, including the A1 Morpeth to Ellingham project, to allow delivery as part of the RDP. Approving this package of works on the A1 would support delivery commitments as published in the HE Delivery Plan Update 2018/19. This paper was subsequently submitted and approved in October 2018. This paper also included a request for PCF Stage 5 funding for the A1 Morpeth to Ellingham project.

The RDP framework was awarded in November 2018, with Costain being awarded Package B10 in the north-east region. The A1 Morpeth to Ellingham project will be utilising the RDP framework to award the design and build contractor for PCF Stages 5, 6 and 7. It is expected that Costain will be awarded the Contract for A1 Morpeth to Ellingham following HE IDC endorsement and Highways England Investment Committee (HE IC) approval in November 2020.

1.5 Provide evidence that the proposal is affordable and explain people considerations

The full project cost in V1.2 of the Capital Baseline and the Operational Plan V1.2 is £270.1m. The latest approved RDP Central Estimate for the project is £338.7m. This estimate was approved in March 2020. The project, based on the RDP Central Estimate, is currently £68.6m above the Capital Baseline and the Operational Plan.

The project is seeking approval through change control to drawdown £68.6m of Portfolio Risk. The project is also being presented to HE IDC on 11 November 2020 to seek endorsement to enter into contract with Costain up to the limit of the RDP Central Estimate, if successful we will seek final approval from HE IC on 24 November 2020.

If this change is not approved, there is a contingency plan to deliver the project, this would mean a different delivery strategy for the project and is set out in **Section 6.4**.

1.6 Project and Programme Management – deliverability

The project is managed in accordance with HE PCF. To ensure that the project undergoes quality assurance, regular SGARs are completed and an Amber or better rating is required before progress can be made to the next stage. The A1 M2E project gained a Green rating at SGAR 2 on 17 May 2017. An Interim SGAR 3 was held on 9 May 2018 and was awarded a Green rating. An interim SGAR 3 took place on 6 April 2020 to review all non DCO PCF products and received a Green rating. The end of Stage SGAR 3 took place on 6 July 2020, where all combined DCO products and this OBC was assured, prior to submission of the DCO on the 6 July 2020.

Independent Assurance Reviews (IAR's), using the Independent Project Assurance (IPA) Gateway process, are conducted by experienced and impartial reviewers. The purpose of the IAR is to ensure that the project is kept on track to success, and are run effectively to prevent failure. It provides the Senior Responsible Owner (SRO), and the Accounting Officer, with confidence that all programs and projects will deliver their benefits to time and budget. These usually take place at the end of each Stage unless otherwise stated. IAR reviews take place at the end of stage 0, 2, 3, 5, 6 and at the end of stage 7.

In June 2017, the project achieved an Amber/Red rating at the IAR 2. In preparation for the RDP contract award, a Project Assurance Review (PAR) was conducted in September 2018. This PAR aimed to give a high-level delivery confidence assessment on the project to support the decision on whether to award the RDP contract. The project was awarded an Amber/Red rating with 2 actions, which have since been closed. This highlights the project's ongoing effective management throughout the stage.

The IAR 3a took place 1-3 October 2019 and received a Red rating due to the VfM position on the project. Following sign off of the latest VfM and AAS statements, the BCR had dropped below 1.0 to 0.8. As a result, the DCO was put on hold until approval to proceed was received from DfT.

Following the Red rating at the review, an Assurance Action Plan (AAP) was produced by the Project Sponsor, which was approved by the Regional Sponsor and was submitted to the IAR Review Team Leader on 10 January 2020.

HE governance stipulates that, following a Red rating, a review of the AAP has to be carried out by the IAR Review Team Leader to ensure the action plan is robust and that realistic actions are in place to address the review's original findings. This review took place on 14 January 2020 and received a Red rating. This was because approval was still being sought from both DfT and Her Majesty's Treasury (HMT) for the progression of the project based on the current Low VfM. The Review Team Leader confirmed that the AAP addressed the other concerns raised at the review and the AAP was closed, with agreement that the project could progress when authority was obtained.

On 20 February 2020, approval was given by DfT & HMT to submit the DCO based on the BCR of 0.8 and Low VfM. As described in Section 1.2.1, the decision was taken to combine the two separate DCOs and to submit a single combined DCO. Before the DCO could be submitted, the project needed to achieve an 'Amber' or better rating at both an IAR 3a and SGAR 3. The project held an IAR 3a between 18-20 May 2020, where it received an Amber/Green rating. SGAR 3 was held on 6 July 2020 and received an Amber rating.

Following completion of this governance, the project team received a revised VfM statement. The project has an updated BCR of 0.95 and is now Poor VfM. The low BCR and Poor VfM were referred to the Director General of DfT in July 2020 and approval was given to submit the combined DCO. Further approval was received from the DfT to publish the legal notice to commence the DCO process in August 2020. Due to the Poor VfM, the project remains on Highways England's Watchlist and further escalations to DfT may be required going forward to seek confirmation of the approval to progress, especially following the outcome of the DCO. Risks | legal | regulatory

The project is considered an NSIP alteration project for the purpose of the Planning Act 2008, section 22. An "Alteration" NSIP is deemed to be most appropriate, as it covers projects where land is being developed outside the existing highway boundary. A DCO is being produced, therefore, to secure the necessary approvals to proceed to construction.

The A1 Morpeth to Ellingham project is one project, widening 13 miles of the A1 single carriageway to dual carriageway. This consists of:

- **A1 Morpeth to Felton** – upgrade approximately 8 miles of the A1 between Morpeth and Felton to dual carriageway standard.
- **A1 Alnwick to Ellingham** – upgrade approximately 5 miles of the A1 between Alnwick and Ellingham to dual carriageway standard.

The above sections were being delivered sequentially, with two separate DCOs, but, as described in Section 1.2.1, these are now being combined into a single combined DCO submission.

The project has secured the services of DLA Piper Ltd. They have provided legal advice in PCF Stage 3 and have assisted in the completion of the DCO documentation, and will provide continued support through the PCF Stage 4 and the examination stage of the process.

1.7 Recommendation

This OBC has been updated since presenting it at SGAR 3 and IAR 3a, and securing the required assurance to submit the DCO and move into Stage 4. The recommendation of this updated OBC is that the A1 Morpeth to Ellingham project is ready to continue with the detailed design and to move into project contract with the DIP. This will be subject to receiving approval of the change control to increase the budget and receiving endorsement at HE IDC and approval at HE IC in November 2020.

The preferred route for the project was announced in September 2017, and, following this, statutory consultation was held for both sections of the project in the local area, with the majority of stakeholders, road users and residents in support of the project.

A submission was made to HE IDC in October 2018, and the project received endorsement for a Stage 5 budget, subject to the BCR being expected to remain at 1.0 or above, and endorsed approval to contract. This was subsequently approved by HE IC in November 2018.

In October 2018, HE IDC approved:

- A full project budget of £280.6m for A1 Morpeth to Ellingham comprising:
 - **£35.5m Development Phase budget, comprising;**
 - **£15.1m Initial Development Phase** (stages 3-4) previously approved.
 - **£9.5m for Lands** previously approved
 - **£10.9 m Development Phase (stage 5) budget**, subject to the BCR remaining at 1 or above.
 - **£6.7m of advanced Construction phase funding** for advanced stats diversions.
 - **Approval to contract up to £241.56m Construction phase.** This includes £4.7m of advanced construction phase budget, previously approved by HE Board, for the early materials order and land purchase (£0.5m) for the diversion of a high-pressure gas main.

The project is seeking approval through Change Control to draw down £68.6m of Portfolio Risk.

The project will also be returning to HE IDC on 11 November 2020 where it seeks to:

- **Endorse** a funding request of £18.0m as set out in the table below:

| Phase | Previously Approved | Funding Request | Total incl approval |
|--------------|---------------------|-----------------|---------------------|
| Options | £3.6m | £0.0m | £3.6m |
| Development | £26.0m | £16.0m | £42.0m |
| Construction | £6.7m | £0.0m | £6.7m |
| Lands | £9.5m | £2.0m | £11.5m |
| Total | £45.8m | £18.0m | £63.9m |

- **Endorse** an increased 'Approval to Contract Budget' under the RDP of £338.7m.

If this request is endorsed by HE IDC, the project will present this to HE IC on 24 November 2020 for final approval.

The project is also required to return to HE IDC and HE IC in PCF Stage 5 for approval prior to proceeding to construction. If the project has failed to meet the post efficiency operational baseline during design and development, the project will be brought back to HE IC with a recommendation on how to proceed.

2. Strategic context | strategic objectives

2.1 Relevant strategies

The Department for Transport's (DfT) Road Investment Strategy (RIS) was announced in 2015. The strategy sets out the ambition for the next 25 years to “*revolutionise our roads and create a modern strategic road network that supports a modern Britain, making a real difference to people's lives and businesses' prospects.*” As part of this announcement, the A1 Morpeth to Ellingham project was identified as a project for development within the first roads period (2015 to 2020), with start of works by the end of March 2020.

In June 2019, following formal completion of the Change Control process, the SofS accepted a missed commitment to SoW by 12 months from the original commitment of 2019/2020.

Since then, as explained in Section 1.2.1, the decision was taken to combine the M2F and A2E sections into a single combined DCO submission. Following the announcement of RIS 2 on 12 March 2020, the A1 Morpeth to Ellingham project was again announced as a committed project with a delivery timescale of starting construction in Q2 2022/2023 (by 30 September 2022) and an OfT commitment of 2024/2025 (by 31 March 2025).

The project on the A1 between Morpeth and Ellingham aims to improve journey times, network resilience and safety by upgrading 13 miles to dual carriageway. These improvements will provide continuous high-quality dual carriageway from Newcastle to Alnwick.

The strategic case for the intervention is based around delivery of the following objectives aimed at alleviating the problems currently identified on the route:

- **Improve journey times on the route of strategic national importance**

Currently, average speeds along the route are particularly low, especially on areas of single carriageway, due to the high proportion of HGV and agricultural traffic on the route, as shown in *Table 3*. Dual-carriageway provisions aim to solve this problem by creating safe opportunities to overtake and reducing driver frustration (linked to dangerous manoeuvres).

Table 2 - Average speeds on A1 in Northumberland (A1 North of Newcastle Feasibility Study)

| Route Section | Length (miles) | Standard | 07:00-19:00 Av. Speed (mph) |
|----------------------|----------------|----------|-----------------------------|
| South of Morpeth | 5.3 | Dual | 67 |
| Morpeth | 4.6 | Dual | 63 |
| Morpeth to Felton | 8.0 | Single | 50 |
| Alnwick | 9.9 | Dual | 65 |
| Alnwick to Ellingham | 5.0 | Single | 56 |
| Ellingham to Fenwick | 11.4 | Single | 55 |

| Route Section | Length (miles) | Standard | 07:00-19:00 Av. Speed (mph) |
|---------------------------------------|----------------|----------------|-----------------------------|
| South of Berwick | 7.5 | Single | 54 |
| Berwick Bypass (south of River Tweed) | 2.1 | Climbing Lanes | 51 |
| Berwick Bypass (north of River Tweed) | 2.2 | Climbing Lanes | 52 |
| North of Berwick | 2.1 | Dual | 64 |

2.2 As-is position

The A1 Morpeth to Ellingham project completed the preliminary design stage in August 2020. The project is on track to meet the Delivery Plan commitment for start of works, which is Q2 2022/2023.

The project team are continuing to work closely with Northumberland County Council (NCC), the Environment Agency (EA), Natural England (NE) and key stakeholders throughout the DCO process.

Three statutory utility diversions have taken place through 2020, Northern Gas Networks (NGN) Northern Powergrid (NPG) and National Grid (NG) at Causey Park, Morpeth. Two of the three utilities have completed their works. The final diversion (National Grid's high-pressure line) is due to complete at the end of October 2020 with the reinstatement of land and demobilisation concluding thereafter.

2.2.1 History and issues with existing arrangements

The A1 north of Newcastle through Northumberland forms an important route between England and Scotland, especially for long distance traffic on the eastern side of the country. The route also caters for local commuters and agricultural traffic. This section of the A1 provides a link between England and Edinburgh, and, as such, has been recognised by the DfT as a route of strategic national importance.

Other key routes in Northumberland include the A1068 coastal route and the A697 towards Coldstream in Scotland. Other than these routes, roads in Northumberland are characterised as narrow rural links that connect a number of small settlements. The A1, therefore, also acts as a key distributor for more localised trips, as it often provides the most direct route.

Public transport along the route is limited, although a small number of bus services do operate.

In 2002, the case for dualling the remaining sections of single carriageway was reviewed. At that time the capital cost of the upgrade was estimated to be £271m – which is equivalent to approximately £450m in today's construction prices. It was concluded that there was not an adequate justification on economic grounds to dual the whole of the remaining A1 north of Newcastle, but that this should be reviewed if the surrounding sections of A1 were significantly upgraded or there were changes in traffic flows and accident rates.

Over the last decade, the surrounding sections of the A1 have been improved. There have been significant upgrades to the A1 south of Newcastle, with many sections upgraded to motorway standard, and there are further plans to improve the section of the A1 around

Newcastle itself. In Scotland, the A1 has also now been dualled between Edinburgh and Dunbar. However, 36 miles of single carriageway in Northumberland and 8 miles in Scotland remain.

Although the review in 2002 found that there was not an adequate justification for dualling all of the remaining single-carriageway sections, it concluded that there was a need to dual the 8-mile section of road between Morpeth and Felton, and the 2.5-mile section between Adderstone to Belford to reduce the number of accidents at these locations. Projects were developed at both locations. In 2006, the interim Regional Transport Board (RTB) for the North East did not identify either of the projects for the A1 as a funding priority for the period up to 2016. The Government of the time accepted the recommendations of the interim RTB. Neither project was, therefore, progressed.

In 2013, the case for dualling the A1 between Morpeth and Felton and Adderstone and Belford was revisited. This revealed that the proposed dualling project between Morpeth and Felton could potentially deliver value for money based upon estimated journey time and accident savings, but that the proposed dualling project between Adderstone and Belford was unlikely to. However, the study work recognised that there may be opportunities to broaden the scope to identify potential VfM solutions on the wider route.

This study did consider potential opportunities to improve some or all of the A1 between its junction with the A19 at Seaton Burn and the Scottish border, beginning with updated analysis of the problems and issues on the route. However, this study concluded that further work would be needed to explore the benefits of dualling to the Scottish border.

A series of problems and issues on the route have been identified, as summarised below:

- lack of alternative routes;
- inconsistent carriageway standards on the route;
- poor junction standards / layout;
- large number of at-grade junctions / private means of access;
- average speeds on the single carriageway sections of the route are significantly lower than sections that have been upgraded to dual carriageway;
- relatively high proportion of HGVs (and agricultural vehicles) resulting in reduced speeds for following vehicles and potential for driver frustration;
- lack of overtaking opportunities; and
- peak hour traffic speeds significantly below free flow speeds - analysis of Traffic master data shows that peak hour traffic speeds are significantly lower than average off-peak speeds.

These problems and issues are likely to be exacerbated in the future if traffic continues to grow.

Given that traffic volumes reduce considerably on northern sections of the route, it is clear that investment (from an operational perspective) is a higher priority on the southern sections. However, given the data presented, it is evident that there is still some rationale for investment on the wider route.

Based on these identified problems and issues, a series of route objectives have been identified. These are:

- Improve journey times on this route of strategic national importance.

- Improve network resilience and journey time reliability.
- Improve safety.
- Maintain access for local traffic whilst improving the conditions for strategic traffic.
- Facilitate future economic growth.
- Avoid, mitigate and compensate for potential impacts upon the built and natural environment.

These problems are predicted to worsen as traffic volumes are due to increase in the future. NCC's, the local authority, aspirations for the region are to have 10,000 new jobs in the county by 2031. Dualling of the A1 to the Scottish border is an ambition of NCC to support this development aspiration.

The project is politically very high profile with the original announcement of investment being made by former Prime Minister, David Cameron & Anne-Marie Trevelyan, MP.

Anne-Marie Trevelyan, MP is quoted as stating: "The dualling of the A1 in Northumberland will be a catalyst for economic growth in the North East and provide a high-quality service for its users by improving connectivity between Newcastle and Scotland and beyond."

2.3 Business need

2.3.1 Key drivers (internal and external)

Internal

The A1 in Northumberland forms an important strategic route between England and Scotland through Northumberland, especially for long distance traffic on the eastern side of the country. The government has recognised the importance of the route, particularly its role in facilitating the movement of freight and its role in providing transport connectivity between the UK's capital cities. The route also caters for local commuters and agricultural traffic. The route is some 59 miles long; 23 miles are dual carriageway, with 36 miles of single carriageway (in three sections of 8, 5 and 23 miles heading north).

The problems and issues identified during the A1 in Northumberland Stage 0 Feasibility study were:

- a lack of alternative routes;
- inconsistent carriageway standards on the route;
- poor junction standards and layouts;
- a large number of at-grade junctions and private means of access, which can result in delays to following vehicles and potential for accidents when vehicles slow down to exit or enter the main carriageway;
- average traffic speeds on the single carriageway sections are significantly lower than sections that have been upgraded to dual carriageway;
- a relatively high proportion of heavy goods vehicles and potential driver frustration;
- the lack of overtaking opportunities; and
- peak hour traffic speeds significantly below free-flow speeds.

External

The dualling of the A1 north of Newcastle supports the external strategies of two major bodies in the north, Northumberland County Council & Transport for the North.

The A1 Morpeth to Ellingham project links in with Northumberland County Council's Road Strategy 2018 to 2023. Northumberland County Council have the following aspirations:

NCC have a clear long-term strategy where they have identified a need to provide additional focus on reducing casualties in the older and younger road user groups. The overarching aim of this strategy is therefore -

“To reduce collisions and casualties throughout Northumberland, with a focus on older, younger and vulnerable road users.”

Specifically, they aim to:

1. Reduce the number of people killed or seriously injured on Northumberland's roads.
2. Reduce the number of children (0-16), young people (17-24) and older people (70+) injured on Northumberland's roads, particularly in disadvantaged areas.
3. Reduce the number of casualties from vulnerable road user groups (pedestrians, pedal cyclists and motorcyclists).

In order to deliver the aims of this strategy, Northumberland Road Safety Coordination Group (NRSCG) will work together to reduce casualties and improve road user behaviour by using a combination of techniques. There are three key techniques that can be used and depending on the desired outcome, a combination of these will be used.

The three key themes are known as the '3Es' - Education, Engineering and Enforcement.

The objectives adopted by the NRSCG that will help deliver these aims are based on these 3Es:

1. To increase and improve road safety education programmes to target older, younger and vulnerable road users.
2. To target road safety engineering where there is evidence of most need.
3. To target enforcement activities where there is evidence of most need.

The actions that NSRCG will jointly deliver to improve road safety will be set out in an annual NRSCG Action Plan. Their effectiveness will be measured through the targets set out below.

The aspirational goal is to achieve a long-term future without fatalities on our roads. However, this can only be achieved through an on-going process of casualty reduction.

Having reviewed the evidence and current statistics, the following targets have been set for the period to 2023:

1. A 20% reduction in the number of people killed or seriously injured in road traffic accidents by 2023, compared to the 2010-14 average.
2. A 50% reduction in the number of children (up to and including 16 years) injured in road traffic accidents by 2023, compared to the 2010-14 average.

3. A 50% reduction in the number of injuries sustained by young people (aged 17 to 24) by 2023, compared to the 2010-14 average.
4. A 20% reduction in the number of injuries sustained by older people (aged 70+) by 2023, compared to the 2010-14 average.
5. A 25% reduction in the number of vulnerable road users (pedestrians, pedal cyclists and motorcyclists) injured by 2023, compared to 2010-14 average.

Transport for the North (TfN)

TfN state that the Major Road Network (MRN) for the North, is defined as -

“The road network that is most economically important to securing the North’s productivity and growth; both now, and in the future.”

TfN strategy is to work with Partners to develop business cases and secure funding for investment in the MRN, with potential funding sources including National Road Investment Strategy (RIS) and other DfT funded Combined Authority and LEP funding programmes, and from the private sector.

The Northern Powerhouse Strategy demonstrated that the North’s economy was worth £304billion in 2014, similar to the whole of Belgium, and accounting for 19% of UK output.

The Northern Powerhouse Independent Economic Review (NPIER) demonstrates that a transformational growth scenario by 2050 could generate £100 billion Gross Value Added (GVA) increase to the Northern Economy. As noted by TfN’s Chairman, this is:

“A prize worth having both for the North and for the rest of the UK”.

This involves a specific focus on four prime capabilities and three enabling capabilities that both suit the North’s strengths and the opportunity for growth.

Existing devolution agreements, City Deals, funding investments and the government’s Industrial Strategy are enabling the North to make progress. Yet transformative economic growth depends on the ability of the North’s transport network, including its major roads, to help both:

- rebalance the economy: economic growth in the North needs to be at least as high as the rest of the country, to complement and act as a balance to the economic weight of London. To increase productivity to meet the levels currently only seen in London and the South East; and
- create a single economy in the North of England: a world class transport system must better link up the individual cities and towns in the North, to allow them to function as a single economy and be stronger than the sum of their parts. At the same time there is a need to recognise the importance of environmental, safety and equality objectives, so that the economy grows in a balanced and efficient way to ensure that decisions taken now support the lives of generations to come.

Central to TfN’s vision is a resilient MRN increasingly offering improved and more reliable journey times, linked seamlessly to local networks and the Important Economic Centres (IECs) critical to achieving transformational economic growth. Our review of an extensive strategic and local transport, land use planning and regeneration led evidence base identified complementary aspirations on the role and performance of our MRN, and how it can contribute to transformational economic growth, whilst also contributing to quality of ‘Place’.

These include the role of roads in terms of the following outcomes:

- Journey Reliability.
- Network Efficiency.
- Network Resilience.
- Journey Quality including information provision and asset condition.
- Safety.
- 'Place' in terms of the urban and natural environment.

TfN analysed these road based activities in the context of pan-Northern connectivity, the emerging objectives in the TfN Strategic Transport Plan 19 and where TfN has a role to play and value to add.

Adopting terminology used in the rail industry, a number of Conditional Outputs were developed, essentially outcomes we want to achieve for the TfN MRN. The primary purpose of any road network in terms of safety and asset condition remain the operational responsibility of the local highway authority and the Conditional Outputs, which have been developed by TfN and agreed with partners, must be considered in this context. Equally, TfN wish to promote an enhanced built and natural environment across the North and will work with partners to support quality of place within the local context. Health, wellbeing and the environment are important to the pursuit of transformational economic growth and are overarching objectives considered at the Strategic Transport Plan level, and as such they have not been identified as specific Conditional Outputs within this report.

TfN Conditional Outputs

This leads to four key areas of Conditional Outputs (CO) that TfN has an influence over, and in the specific context of pan-Northern journeys in particular. These are:

- CO1. Journey Reliability.
- CO2. Network Efficiency, including a measure of average delay, enhanced use of technology and vehicle occupancy as a proxy for people's behavioural change.
- CO3. Network Resilience.
- CO4. Journey Quality including information provision and asset condition.

It is important that the COs are considered in an economic, rather than transport, context and demonstrates why each of these four CO areas are important to the transformational growth scenario detailed in previous chapters, and to the specific NPIER and productivity challenges that are holding back the North's economy.

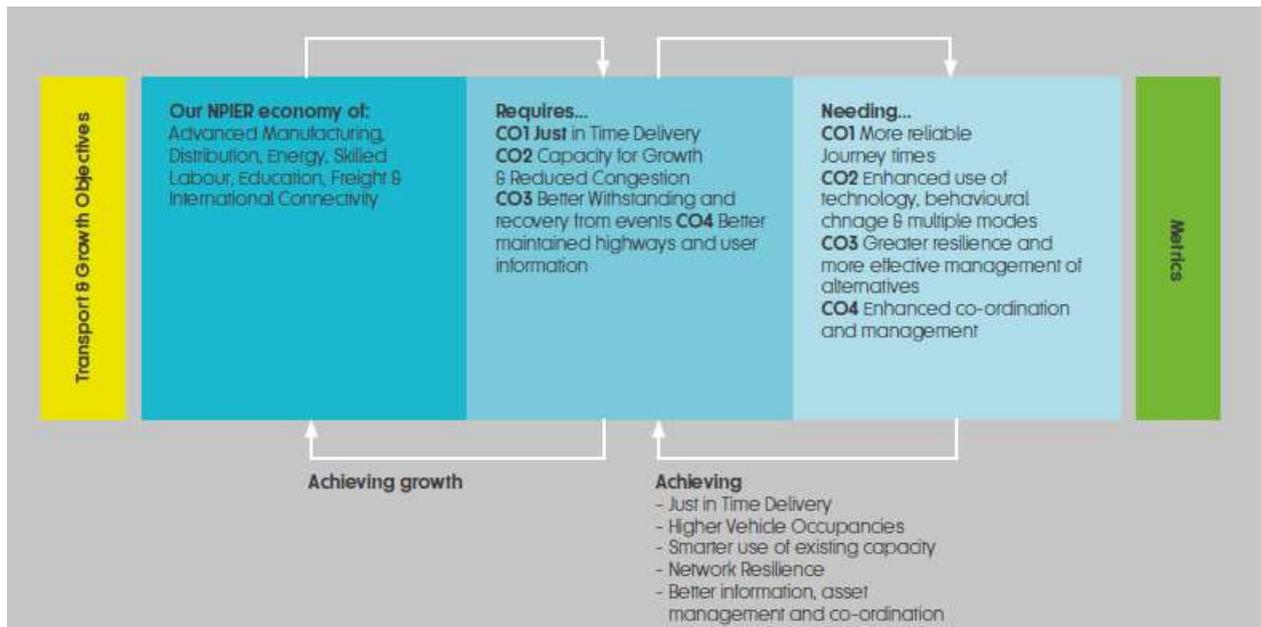


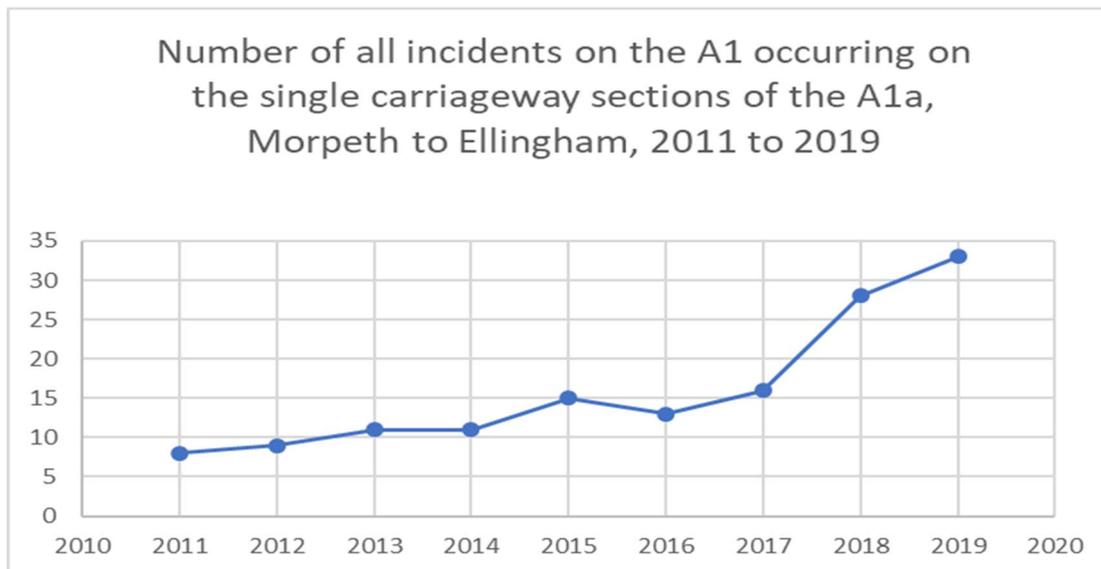
Figure 1 - Conditional Outputs vs Benefits Model

Statistical data on incidents within the Morpeth to Ellingham section of the A1

The data below was obtained in January 2020 from HE Regional Intelligence Unit (RIU) and shows the following:

Number of all incidents between Morpeth and Ellingham

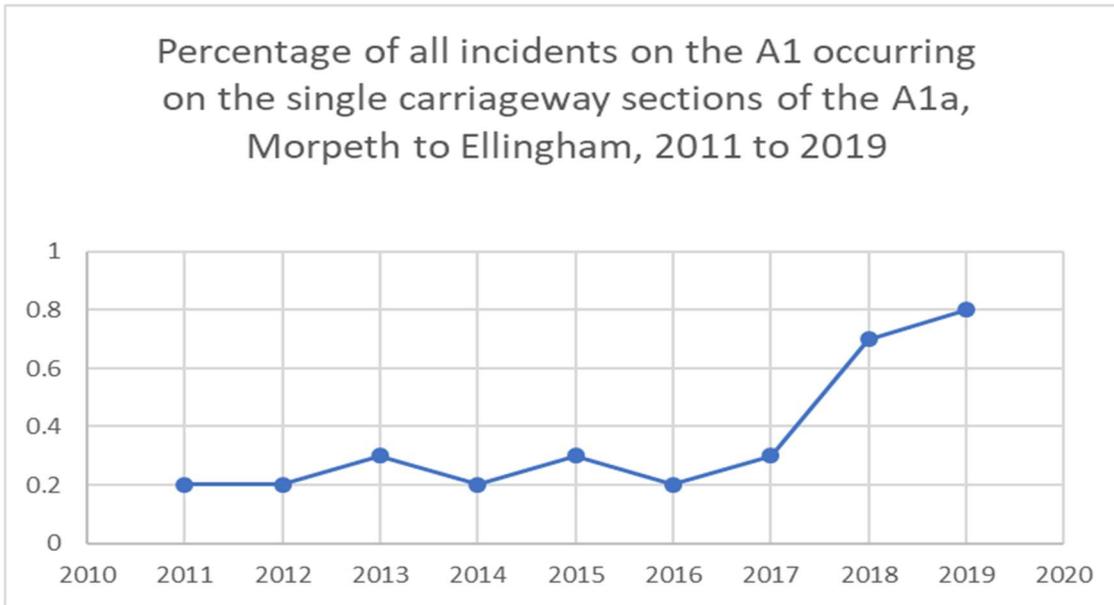
Between 2011 and 2019, there was a total of 272 reported incidents occurring on the single carriageway sections of the A1 between Morpeth and Ellingham. The main cause of incidents being traffic collisions and obstructions. Between 2011 and 2019, there has been an increase in the number of reported incidents each year.



Proportion of all incidents on the A1 occurring between Morpeth and Ellingham

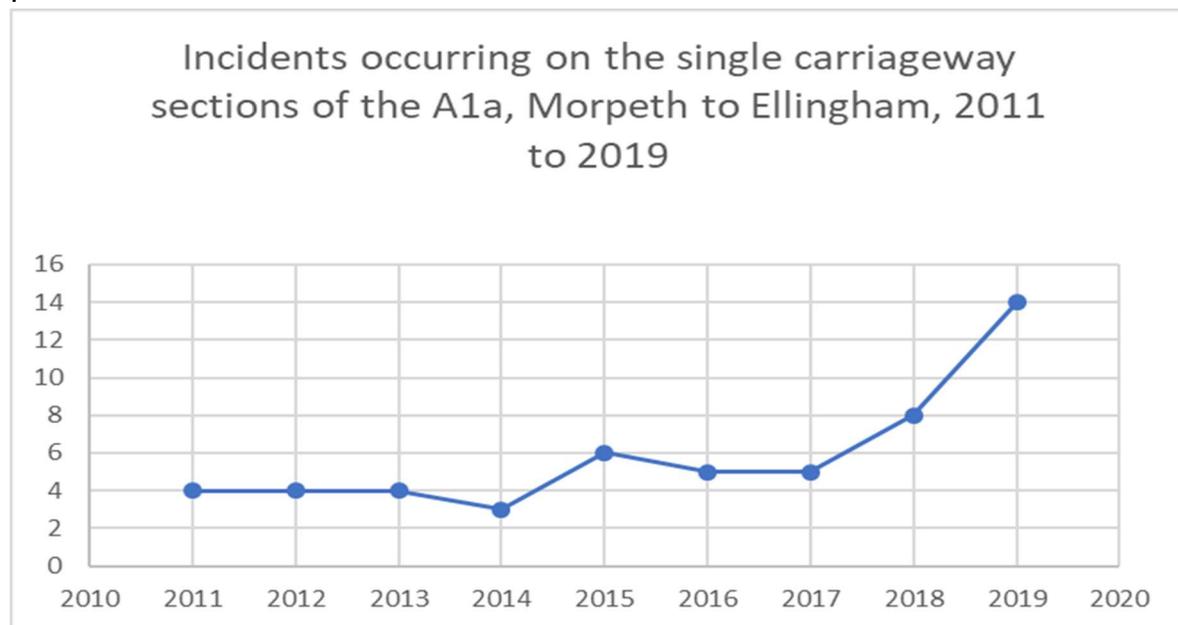
0.8% of incidents on the A1 in 2019 were recorded between Morpeth to Ellingham. The A1 is approx. 660km long and 0.8% of its collisions occurred last year across the 29km

stretch between Morpeth to Ellingham. This proportion has steadily increased from 0.3% in 2011.



Proportion of incidents between Morpeth and Ellingham in relation to the rest of A1

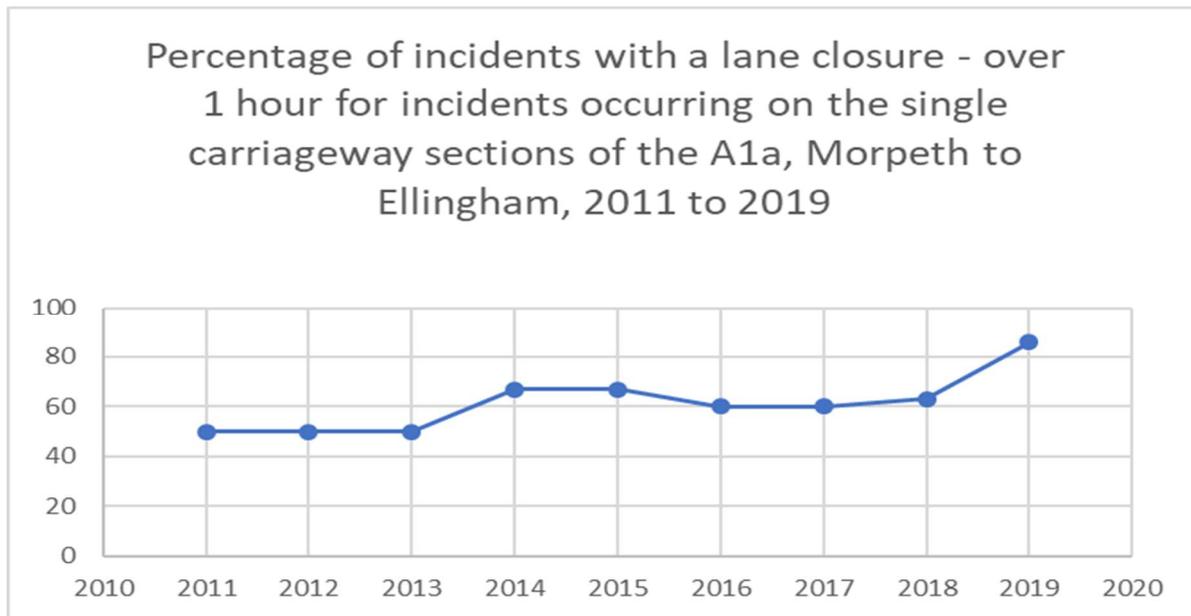
19.5% of all incidents recorded between Morpeth and Ellingham on single carriageway caused a closure. Incidents causing lane closures has increased almost every year. In 2011, 4 incidents caused a closure. Comparatively, in 2019, 14 closures occurred and in 2019, 0.6% of all closures on the A1 occurred on the single carriageway between Morpeth and Ellingham.



Incidents causing closure over an hour

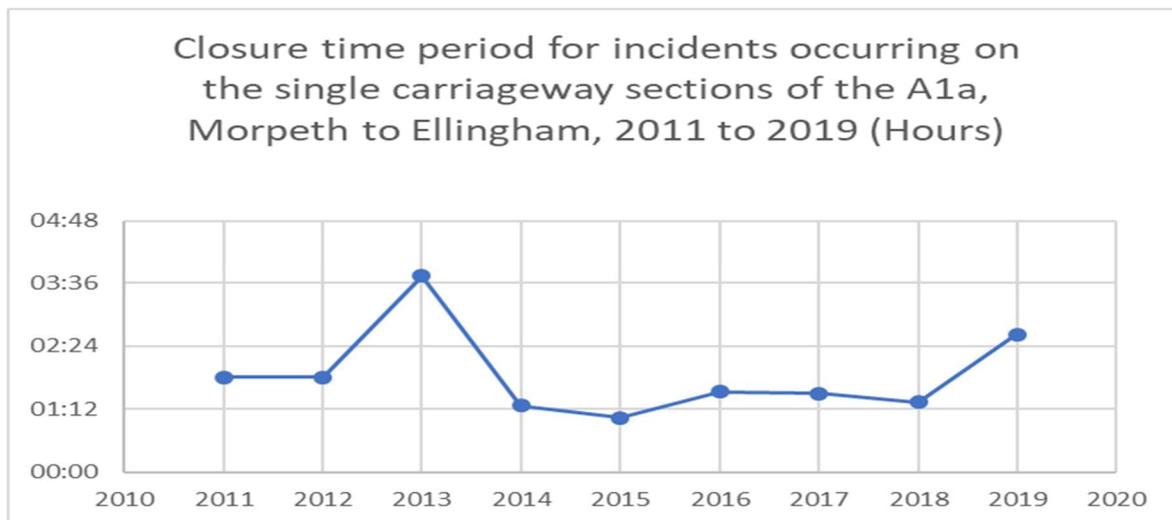
In 2019, 12 out of 14 incidents caused a closure of a single lane or carriageway of over one hour.

Since 2011, the number of closures over an hour have increased by 36%.



Average clearance time of incidents

In 2019, the average clearance time of an incident was 2.5 hours. This has fluctuated from 2011 to 2019, with no clear increase over time.



Delivering the A1 Morpeth to Ellingham project would also compliment the Government’s long-term aspiration to dual the A1 from Newcastle to the Scottish Border. This project aims to upgrade the route to dual carriageway, with compact grade separated junctions, in line with the Government’s aspiration to dual the A1 between Ellingham and the Scottish Border.

The project to dual the A1 from Newcastle to the Scottish Border is currently in PCF Stage 0 with the most recent work being a scoping study commissioned to consider the opportunities for accelerated delivery of the project including how to achieve a Start of Works in 2023.

The expected benefits of the project are:

Improving safety for all: by reducing accident rates along the route through improved road standards and providing safe overtaking opportunities.

Providing fast and reliable journeys: the dualling upgrade would allow vehicles to travel at a constant speed and provide adequate overtaking opportunities, reducing journey times and improving journey time. Route resilience would also be improved during incidents and planned maintenance due to the provision of an additional lane in each direction.

Meeting the needs of all users: by improving accessibility for horse riders, pedestrians and cyclists on the A1 corridor. The quality and continuity of the route would be improved by providing a fully dualled A1 between London and the Scottish border.

2.3.3 Impact of not changing/doing nothing

It is likely that the issues listed above would be exacerbated in the future if traffic volumes increase with the forecast increase in traffic. This will particularly affect the issues of low traffic speeds, high proportions of HGV traffic, lack of overtaking opportunities and peak hour speeds being significantly below free flow speeds.

Stage 2 safety assessments for M2F predicted a reduction of 18 fatal, 130 serious and 696 slight accidents. The M2E project indicates a total reduction of 23 fatal and 166 serious and 880 slight accidents over the 60-year appraisal period.

2.4 The project

2.4.1 Scope

The RIS scope for the project states: Upgrading multiple sections of the A1 to dual carriageway to provide continuous high quality dual carriageway from Newcastle to Ellingham, north of Alnwick.

The project consists of widening two sections of the A1 single carriageway to dual carriageway, as set out below:

A1 M2F Dualling – 8 Miles of new dual carriageway with 6 miles being laid offline

- Southern end: 'online' widening between Warreners House (A697 overbridge) and Priests Bridge
- Middle section: new 'offline' construction between Priests Bridge and Burgham Park (west of existing)
- Northern end: 'online' widening between Burgham Park and Felton (B6345 overbridge)
- New road bridge over the River Coquet, parallel to the existing road bridge
- Three new split-level junctions, which include a bridge over the A1
- One new overbridge at Causey Park and one road beneath the A1 at Burgham Park

A1 A2E Dualling – 5 Miles of new dual carriageway laid online

- All 'online' widening between the end of Alnwick Bypass (Denwick) through to Ellingham (Browneside Junction)
- One new split-level junction, which includes a bridge over the A1
- One Accommodation overbridge at Broxfield

2.4.2 Proposed strategic benefits and key performance indicator contributions

Strategic Benefits

To address the identified issues and in alignment with local, regional, national policy and HE Key Performance Indicators (KPIs), a number of project objectives and outcomes have been developed.

A summary of the project objectives is detailed below and can also be found in the Client Scheme Requirements (CSR):

The specific objectives are as follows:

- **Resilience** - The current lack of safe over-taking opportunities and high volume of HGV traffic, as well as driver frustration and high frequency of junctions and accesses, creates more potential for vehicular conflicts leading to reduced journey time reliability. Providing an additional lane on the A1 in this location will improve network resilience by providing more capacity on the network, which will enable the network to recover more quickly to normal levels of service following an incident. It will also provide an extra lane that can be used in the event of a break down or blockage to ensure that traffic can continue to flow. This additional capacity will also minimise disruption when future maintenance activities are undertaken, where a lane closure would be required. Providing a dual carriageway will provide earlier and safer overtaking opportunities for vehicles looking to overtake slower moving vehicles. The de-trunked section of the A1 will also provide an alternative route that vehicles making local journeys can use.
- **Journey Times** – The project is forecasted to have a significant beneficial impact on journey times enabling a reduction in travel times along the route.
- **Accessibility** - The junctions have been designed to current relevant standards and the project includes clear signage to guide drivers. Four new grade separated junctions are to be provided as part of the project, which will remove turning conflicts. The reduction in junctions and private accesses directly accessing the A1 removes potential vehicle turning conflicts and the de-trunked A1 will provide an alternative local route for some of the local vehicles. Local traffic will also benefit from the additional capacity on the highway network. The replacement of private means of access onto the A1 with more reliable access onto the wider road network.
- **Safety** – A COBALT assessment forecasts that the project will provide an accident reduction benefit of £32 million and that the project will save 414 accidents when compared to the ‘without project’ scenario. The project includes relocation of bus stops, which will improve visibility at junctions and, therefore, safety of users. The project also includes some changes to public rights of way, including diversions that will reduce the risk of accidents for walkers, cyclists and horse riders on the route.
- **Environment** - The project is designed to mitigate the environmental impacts by incorporating improved landscaping, water management and maintain the air quality status. There are 2 Noise Important Areas (NIAs) along the route. The proposed noise levels at NIA 10002 will be reduced by a least 10db and noise levels at NIA 1003 will not increase.
- **Economic Growth and Development** – The strategic case for the project is that it will contribute to a continuous, high-quality dual carriageway north of Newcastle to the Scottish border. The project is located in the North East where productivity is the lowest of any region in England at £20,129 gross valued added (GVA) per head, whilst the region simultaneously receives the third lowest government capital spending per head at £700.

Key Performance Indicators

The project will also contribute to the following KPIs:

- **Improving safety for all**
- **Providing fast and reliable journeys**
- **A well maintained and resilient network**
- **Being environmentally responsible**
- **Meeting the needs of all users**
- **Achieving efficient delivery**

Details of how the project contributes to the RIS 2 strategic outcomes are included at **Annex D**.

2.4.3 Health and safety impact

The PCF Stage 3 Safety Assessment has been carried out and concludes that much of the vehicle collision risk will be removed or reduced due to the installation of dual carriageway leading to a reduction in overtaking in the 'on-coming' lane.

A collision analysis has been carried out which looks at the wider area, and below is a summary of findings for A1 M2F and A1 A2E.

The safety baseline is defined by the personal injury collisions (PICs) that occur in the three-year period immediately prior to the start of the construction works for the project, which is not available at this time. However, to get a better understanding of the existing safety performance, five years of personal injury collision data over the period from 1 January 2011 to 31 December 2015, inclusive, has been reviewed. The safety baseline will be established when PIC data for the three-year period immediately preceding construction is available.

Table below details the performance of A1 Morpeth to Felton and A1 Alnwick to Ellingham against the GB averages on single carriageway class 'A' roads. Information highlighted in **red** is performing below the GB average; information highlighted in **green** is performing better than the GB average.

Table 3 - A1 M2F and A1 A2E comparison with GB average on 'A-Class' Roads

| | A1 Morpeth to Felton | A1 Alnwick to Ellingham | GB averages on single carriageway 'A' Roads |
|--|----------------------|-------------------------|---|
| % fatal collisions | 3.45% | 27.27% | 1.40% |
| % serious collisions | 12.07% | 36.36% | 13.90% |
| % slight collisions | 84.48% | 36.36% | 84.70% |
| % KSI collisions | 15.52% | 63.64% | 15.30% |
| % KSI casualties | 13.33% | 40.91% | 17.38% |
| FWI per billion vehicle miles | 14.83 | 37.33 | 22.32 |
| Fatal casualties per billion vehicle miles | 7.22 | 30.03 | 3.86 |
| Serious casualties per billion vehicle miles | 4.33 | 6.01 | 6.97 |
| Slight casualties per billion vehicle miles | 3.28 | 1.30 | 11.49 |

All statistical analysis within this section compares the project to the 2013 GB average on all non-built up roads, sourced from the Reported Road Casualties Great Britain 2013.

A1 M2F

Within A1 M2F section, over the five-year period the number of fatalities is 3.45% of PICs, while serious collisions accounted for 12.07%. Slight collisions accounted for 84.48% of all PICs. The percentage of fatal collisions, percentage of KSI collisions and the fatal casualties per billion vehicle miles are all above the GB average within A1 M2F. The cause of the majority of KSIs is due to vehicles encroaching on the opposing carriageway, providing a dual carriageway will remove this risk.

A1 A2E

Within A1 A2E section, over the five-year period the number of fatalities is 27.27% of all PICs, serious collisions accounted for 36.36% of PICs and slight collisions accounted 36.36% of PICs. The percentage of fatal collisions, percentage of serious collisions, percentage of KSI collisions and casualties, FWI per billion vehicle miles and fatal casualties per billion vehicle miles are all above the GB average within A1 A2E. The cause of the majority of KSIs is due to vehicles encroaching on the opposing carriageway, providing a dual carriageway will remove this risk.

The results of the SMS selection process on A1 M2F are:

- One feature categorised as Type B
- Two features categorised as Type A/B
- Three features categorised as Type A

The overall categorisation is Type A.

The results of the SMS selection process on A1 A2E are:

- One feature categorised as Type B
- One features categorised as Type A/B
- Four features categorised as Type A

The overall categorisation is Type A.

A1 M2F in accordance with IAN191/16 [3], has one Type B and two Type A/B features. IAN191/16 states that to be classified as a Type B SMS there must be three or more features identified as a Type B, this is not the case. As the categorisations are predominantly Type A, this indicates that the application of a Type A SMS is suitable for this section.

A1 A2E, in accordance with IAN191/16, has one Type B and one Type A/B features. The majority of the features are categorised as a Type A. As a result, the application of a Type A SMS is suitable for this section.

The one Type B categorisation will be managed within the stakeholder work stream with input from the operational safety work stream. Engagement with stakeholders will be undertaken to develop mitigations, for example for issues surrounding WCHR and bus services.

2.4.4 Equality impact

As the A1 in this location passes very close to an area of outstanding natural beauty many groups are affected by the proposals. This includes pedestrians, including those with

disability (visual and mobility impaired), pedal cyclists, horse riders, and all types of motorists (including very wide loads).

The project team have worked closely with numerous accessibility groups in Northumberland throughout the development stage to address some of their key concerns. This was to understand the impacts to them, both during the construction of the works and to ensure it will be fit for purpose when completed. The groups engaged include:

- Northumberland County Council
- Joint Local Access Forum
- Environment Agency; and
- Natural England

In 2017, HE conducted an Equality impact assessment (EQiA). The aim of this survey was to identify those Customers, Staff or Stakeholders that are impacted by the project.

Key stakeholders Included:

- Statutory Bodies
- Local Action Groups
- Local Communities along the route and within direct catchment area
- Member of Parliament, Anne-Marie Trevelyan
- North East Local Enterprise Partnership (LEP)
- SofS for Transport

The customers affected were, however, most likely to be all road users of the current A1, which included both local and strategic traffic.

The overall response to the questions on the survey was positive with the level of impact across different groups being low. It was, however, acknowledged that certain groups may have different needs or issues with regards to improvements on the A1. This is countered by the fact that the proposed project will likely address these needs while improving conditions for all other groups at the same time.

It is also acknowledged that the project will likely have a larger uptake by older people compared to the national average, however, this is purely down to the demographics of the region where there are older people compared to the national average.

The overall outcome of the survey was that a 'Full Equality Impact Assessment' to be undertaken as the project is considered to improve conditions for all age groups and not to impact individual groups differently.

An Assessment has also been carried out using HE's Equality, Diversity and Inclusion Tool (EDIT) and available data from 2011 census to further understand the demographics of the region.

Neither the EDIT tool nor the EqiA carried out suggest that the project is likely to impact groups differently or to have a detrimental impact on any group, which further supports the position that a full EqiA is not required at this stage.

The project team carried out a further equality assessment following completion of statutory consultation at Stage 3 to review any potential new evidence and/or concerns that stem from the consultations.

The equality impact of the project is set out in the EQIA screening [A1 M2E Equality Impact Assessment](#)

2.4.5 Environmental impact

The environmental impact of the project is set out in the Environmental Impact Assessment (EIA) screening. This was split into separate documents for each section of the project: [M2F EIA Screening](#) – November 2017 and [A2E EIA Screening](#) - August 2018.

The current level of analytical assurance is **Amber/Red**. The Analytical Assurance Statement (AAS) can be found in **Annex B**. With regards to the Red assurance for the Environment aspects shown in the AAS, there is an action plan in place to address the issues raised.

This has been reviewed by the relevant HE SES technical specialists. Once the action plan has been completed, the assurance will be reviewed and a new AAS will be produced. It is expected that completion of the action plan will improve the AAS. SES will review the outputs of this once the actions are completed and will revise the AAS as appropriate. However, the analysis must be finished before the completed updated products can be assured and this will only occur after the HE IDC and HE IC meetings in November 2020.

With regards to the Air Quality Impact Assessment required for the River Coquet Bridge woodland area, SES, the project team and the legal advisers, DLA Piper, are aligned on the 'maintain status'. All parties are in agreement that the project team have undertaken a robust assessment with regards to Air Quality effects, however, the Air Quality/Biodiversity impact assessment has not yet been agreed with Natural England. Natural England have advised that the woodland area should hold a 'restore status', and the impact of this is that if it changes the assessments to having a significant Air Quality impact, and HE cannot reach agreement with Natural England, the issues may have to be addressed as part of the planning process.

2.4.6 Key stakeholder and customer requirements

The customers affected are most likely to be all road users of the current A1, which includes both local and strategic traffic, as well as residents and communities adjacent to the project. As a result, significant consultation and stakeholder engagement has been carried out.

A Customer Plan has been produced detailing the measures that will be implemented on the project and customer requirements have been captured from stakeholders during the non-statutory engagement in PCF Stage 2, and the statutory consultation carried out in compliance with Sections 42, 47 and Section 48 of the Planning Act 2008. This involved engagement with Section 42 prescribed consultees, and other key stakeholders.

Statutory consultation was carried out in summer 2018 for the A1 Morpeth to Felton (M2F) section of the project and in February 2019 for the A1 Alnwick to Ellingham (A2E) section of the project. A total of 119 completed response forms were received out of 1979 consultation packs issued to the local community via the post.

Following the decision to combine the DCO applications for M2F and A2E, a further statutory consultation was undertaken in spring/summer 2020, to inform the public. The main themes arising from the consultations are landowner queries on the detailed design of the project, queries about the noise impacts and the drainage design relating to the surface water runoff from the carriageway. The majority of those consulted believe it will create a journey time savings and improve junctions that are perceived unsafe. Those that opposed the project did so based on the view that the amount of traffic did not justify the cost of the project.

The project team have continued to engage with key stakeholders that could influence or have a strong interest in the project to obtain their views on the key issues and emerging concepts. Meetings have been held with Highways England Technical Specialists, Operations Directorate and Area Team, Local Authorities, Statutory Environmental Bodies, National Grid, the local MPs and other relevant local key stakeholders. Key Stakeholder discussions are listed:

Key stakeholders

- NCC - Monthly working group and ad hoc.
- Statutory Bodies - ad hoc.
- Local Action Groups - ad hoc.
- Local Communities along the route within direction catchment area.
- Members of parliament, Anne-Marie Trevelyan, Ian Lavery - quarterly.
- North East Local Enterprise Partnership (LEP) - quarterly.
- SofS for Transport - ad hoc.
- Ngrid - ad hoc.

Further meetings have been held with affected landowners and businesses in conjunction with the District Valuer (DV) to discuss the project.

2.4.7 Options (applicable for strategic outline business case and outline business case stages)

The A1 north of Newcastle Feasibility Study identified four possible investment packages for consideration in terms of affordability, deliverability and value for money. Table below details the findings of this study.

Table 4 - Economic outputs from the A1 north of Newcastle Feasibility study

| Analysis of Monetised Costs and Benefits | Option A - Dualling Morpeth to Felton | Option B - Dualling Full Route | Option C - Dualling to Ellingham | Option D - Dualling to Ellingham with northern measures |
|--|---------------------------------------|--------------------------------|----------------------------------|---|
| Journey Times and VOCs | £150m | £395m | £190m | £225m |
| Accidents | £45m | £55m | £45m | £50m |
| Journey Time Reliability | £15m | £75m | £20m | £45m |
| Wider Impacts | £30m | £75m | £35m | £35m |
| Present Value of Benefits (PVB) | £240m | £600m | £290m | £355m |

| | | | | |
|-------------------------------------|---------------|---------------|---------------|--------------|
| Present Value of Costs (PVC) | £115m - £180m | £500m - £840m | £175m - £300m | £205 - £330m |
| Benefit to Cost Ratio | 1.3 - 2.1 | 0.7 - 1.2 | 1.0 - 1.7 | 1.1 - 1.7 |

Following the feasibility study, Option D was progressed to form part of the RIS as A1 M2E and A1 North of Ellingham (NoE) enhancements; the latter project having now been delivered on site.

Options were then developed for M2F and A2E, and were then analysed for VfM, deliverability and affordability. These options were presented at an early stage during a series of awareness events in May 2016. Following this, feedback was considered, and the options further analysed resulting in the following options being progressed to a non-statutory options selection consultation in November and December 2016:

- Morpeth to Felton Online (Orange)
- Morpeth to Felton Hybrid (Blue)
- Morpeth to Felton Offline (Green)
- Alnwick to Ellingham Online (Orange)¹

The monetised economic case during PCF Stage 2 for the A1 M2E project is based on the following options being modelled using the A1 in Northumberland Transport Model. Following consideration of the safety aspects of the options, ease of construction, stakeholder feedback, cost, value for money and environmental assessment the Offline (Green) option and Online (Orange) option have been identified as the preferred options for Morpeth to Felton and Alnwick to Ellingham respectively and were announced as the preferred route for the improvements in September 2017. **See Section 3.4.**

Table 5 - PCF Options phase - economic appraisal options

| Appraisal Option | Network Scenario | Description |
|-------------------------|-------------------------|---|
| DN | Do Nothing | Same as the 2015 based networks and including: 1. Morpeth Northern Bypass 2. Re-opening of the B6344 road to Rothbury |
| DS2 | Do Something 2 | The Morpeth to Felton dualling, offline alignment and: 1. Morpeth Northern Bypass 2. Re-opening of the B6344 road to Rothbury |
| DS3 | Do Something 3 | Alnwick to Ellingham dualling, online alignment and: 1. Morpeth Northern Bypass 2. Re-opening of the B6344 road to Rothbury |
| DS4 | Do Something 4 | Morpeth to Felton and Alnwick to Ellingham dualling, offline and online respectively and: |

¹ Offline and Hybrid options for Alnwick to Ellingham were shown at the awareness events in May 2016, but discounted by November 2016 on value for money grounds

| | | |
|--|--|---|
| | | <ol style="list-style-type: none"> 1. Morpeth Northern Bypass 2. Re-opening of the B6344 road to Rothbury |
|--|--|---|

The economic appraisal of options was undertaken in line with best practice contained within WebTAG and in consultation with HE Traffic Appraisal, Modelling & Economics (TAME) Division. Additionally, appraisals of the junctions north of Ellingham were modelled in SAR spreadsheets, with the exception of West Mains, which was appraised using VISSIM. **See Section 3.4 for further details.**

2.5 Risk and issue management | risks and opportunities

The following key risks are those considered to affect the project delivery strategy. The focus currently revolves around the examination following the submission of the DCO:

Minimising the risk to delivery:

- The project team have already received approval at HE IDC for advanced construction funding, to enable advanced statutory undertaker's (SU) diversions to commence. These works will be done under the SU providers own powers, so can be done in advance of the SofS Decision on the project. These works cannot be claimed as SoW for the project, as they are early enabling works that will de-risk the construction of the project.

Internal Factors:

- The project team and supply chain are fully resourced to ensure delivery of the DCO requirements. The HE project team has changed during the development stage, however successful handovers and at least one consistent presence (the Project or Senior Project Manager) has been available to ensure continuity.
- The supply chain for the delivery of the Stages 5-7 under the RDP contract is expected to be in place by December 2020, to deliver the required outputs in the form of Contractor (Costain) and Commercial Support (Faithful + Gould).
- The wider support team for the project is in place and includes the HE DCO Manager and DLA Piper (Legal) for delivery of the DCO that are required for the project.
- Funding for the project will be available, subject to the approval of the uplift to the budget by HE IC in November 2020, and successful completion of the statutory process and the project remaining VfM, in line with the HE Licence. The current commercial range estimate has been signed off by HE. The Funding Statement, which has been submitted as part of the DCO details the funding commitments².

External Factors:

- Work on site is due to start in Spring 2022. A number of HE projects are also planned to be in construction in the same period. This, along with the pressure to deliver the government's other key infrastructure projects, such as HS2 / Network Rail Infrastructure upgrades, EA capital programmes and Local Authority capital programmes, will undoubtedly place increased pressure on the supply chain. This is already on the project team's risk register and work is ongoing to ensure this risk is managed. There is a significant engineering challenge for this project and as such specialists will be required for works relating to the River Coquet Southbound Bridge.

² Refer to DCO Funding Statement : <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010059/TR010059-000422-Funding%20Statement.pdf>

- Success of the project and achieving the committed SoW date will only be possible should the DCO be accepted and subsequently granted. The project team are confident that due to the amount of stakeholder engagement carried out to date, and the political and overall stakeholder support for the project, this risk is considered to be low.

A Divisional Risk Management Plan has been produced for all RIP North projects to ensure a consistent approach to risk management is in place, in accordance with APM guidance and the HE Risk Management Manual.

The Lead Supplier with input from the Integrated Project Team and commercial assurance team has produced the Risk Register, which is managed through the internal HE Risk Management tool, Xactium. Risk management meetings are held monthly with the Lead Supplier being responsible for ensuring risk is managed in accordance with the risk management plan. The project team also work closely with the HE internal Risk Manager to ensure risks are recorded correctly and that mitigation actions are captured and managed.

The Top 5 Risks for the project are set out below:

| Risk | | Mitigation Actions |
|------|--|---|
| 1 | River Coquet bridge and slope stability measures: Ground conditions not fully known or understood, so may not be suitable for the current bridge design and/or slope stability measures proposed. | GI now complete – review of results on-going to confirm conditions and stabilisation works needed. This supports the firming up of the strategic assumption requirements. |
| 2 | Pavement Framework expires 9 May 2022. Replacement pavement framework could have higher rates. | Expectation is that Costain will commission Tarmac (current A1iN pavement supplier) ahead of current Cat Man framework expiry to undertake detailed pavement design. |
| 3 | Concerns regarding the Environmental aspects leading Natural England's (NE) potential non-acceptance during examination. | The project team, SES and legal advisors, DLA Piper, all agree that there is a robust assessment that can be defended during examination. It is acknowledged, however, that if NE maintain their objection and the Inspector and SofS agree with NE, then the DCO may not be made and the project not progressed as currently proposed. |
| 4 | Concerns around the supplier performance not being at the expected/required level. Continual poor supplier performance may cause delays to the schedule. | HE to work closely with suppliers to ensure deadlines on programme are met and quality of documentation is kept to a high standard. This will be done through regular meetings/calls and workshops. |
| 5 | Risk of exposing Foot and Mouth Burial Pit increased. | Detailed analysis of pit underway. Topsoil strip survey to be undertaken to confirm exact pit location and levels. Detail design to follow Parameter 2 in Limits of Deviation and move the junction north to avoid the pit completely if deemed necessary. |

The project team have taken an active approach to managing project risk and have reduced the project risk. Of active risks, the pre-mitigation most likely estimate of £103m has been reduced to a post-mitigation estimate of £67m through mitigation techniques.

The key economic risks are summarised below:

- Maintenance regimes for appraisal have been developed based on current knowledge and guidance over a 60-years period. Maintenance is not planned over a 60-year period, the interventions are planned and decided based on factors such as pavement condition and available funding for interventions.
- Assumptions around the delays during construction were made from the information about the construction period known at the time. This may well change when further planning for traffic management and construction works progresses.

Any issues with project delivery are recorded in an Issues Log and managed by the Project Team.

Opportunities (efficiencies) are logged and reported, and implemented where practicable, when realised. A full register of efficiencies to-date is recorded [here](#).

2.5.1 Constraints

- The statutory process in the Planning Act (2008) has rigid timescales that must be adhered to. This is reflected in the programme, however if there are any delays to the development of the project, due to the constraint, it is unlikely that any time lost can be recovered.
- The project is following the DCO process, meaning that the red line boundary is defined in the submission and must be adhered to throughout the detailed design and construction stages.
- The project has a latest RDP Central Estimate of £338.7m. This estimate and the corresponding DIP budget are both in excess of the Capital Plan V1.2 and Operational Plan V1.2 of £270.1m. Approval is being sought to increase these budgets through formal change control followed by endorsement by HE IDC and approval from HE IC. If these requests are not approved, then the project will be classed as unaffordable and it would have to be delivered as per the contingency plan set out in **Section 6.4**.
- The project design must account for, and mitigate, impacts to Areas of Special Scientific Interest (River Coquet Valley), Ancient Woodland, Foot & Mouth burial grounds, noise sensitive areas, ancient monuments, flood risks and ecological surveys (great-crested newts, barn owls and bat populations marked for conservation within the Area of Outstanding Natural Beauty (AONB)).
- Anne-Marie Trevelyan MP has heavily lobbied for dualling the A1 up to the Scottish border for the duration of her time in office to date. Should there be a change of political steer (snap election or change of aspiration) this could pose a risk to the project.

2.5.2 Key assumptions

DCO: The A1 Morpeth to Ellingham project is considered a National Significant Infrastructure Project (NSIP) alteration project for the purpose of the Planning Act 2008, section 22. An “Alteration” NSIP is deemed to be most appropriate as it covers projects where land is being developed outside the existing highway boundary. Therefore, a DCO was submitted to secure the necessary approvals to proceed to construction.

Cost Estimate: Approval to contract up to £280.6m was received at HE IC in November 2018. In March 2020, a revised RDP Central Estimate was produced to reflect design

maturity. This has increased the RDP Central Estimate to £338.7m with a DIP budget below this being agreed at [REDACTED], which excludes Strategic Assumptions (SAs) – these are set out, with values, below:

- River Coquet slope stabilisation – [REDACTED]. The extent of slope stabilisation measures has yet to be finalised. Slope stabilisation is required to enable construction of the new River Coquet bridge following emerging findings from the ground investigations (GI) works carried out in early 2020.
- Archaeology – [REDACTED]. Archaeological finds of National or International Significance that impact the completion date by more than 4 weeks.

These SAs represent cost additional liabilities above the DIP budget. The indemnity against costs would occur if the SAs materialise and can be accommodated within the 'Approval to Contract' request of £338.7m.

2.5.3 Dependencies

The current RDP Central estimate ('Approval to Contract') budget of £338.7m is £68.6m above both the Capital Baseline V1.2 and the Operational Plan V1.2. The project is seeking approval through formal change control to drawdown Portfolio Risk. This then requires endorsement by HE IDC and approval from HE IC in November 2020.

The delivery of the project, in line with the RIS statement and as per the programme published in the Delivery Plan, is dependent on gaining the approvals set out in the paragraph above. If the change request is not approved, there is a contingency plan to deliver the project, this would mean a different delivery strategy for the project and is set out in **Section 6.4**.

2.6 Recommendation

The strategic case and **Section 2.3** set out in this OBC confirms that the problems identified on the A1 between Morpeth and Ellingham are significant and strategically important to achieving HE's Business Plan outcomes. The project aligns well with both local and national policy in the region, and without appropriate intervention on this stretch of the A1 there will be a detrimental impact on the Government's long-term commitment to dual up to the Scottish border, as set out in **Section 2.3.1**.

This OBC also sets out the current issues experienced on the A1 in Northumberland, the history of the project, key drivers, links to HE's Delivery Plan & KPI's, original options assessment, the eventual preferred route, stakeholders engaged and impact on Health & Safety, environment and equality.

The recommendation is that the project is given approval to contract and to continue with the detailed design stage, allowing the DIP to undertake PCF Stage 5.

3. Value for money

3.1 Purpose

A VfM assessment has been undertaken on the project, as well as the Do-Minimum option, to enable the VfM to be determined.

3.2 Options appraisal

In PCF Stage 2, the options in the table below were appraised.

Table 6 - PCF Options phase - economic appraisal options

| Appraisal Option | Network Scenario | Description |
|------------------|------------------|--|
| DN | Do Nothing | Same as the 2015 based networks and including: 3. Morpeth Northern Bypass 4. Re-opening of the B6344 road to Rothbury |
| DS2 | Do Something 2 | The Morpeth to Felton dualling, offline alignment and: 3. Morpeth Northern Bypass 4. Re-opening of the B6344 road to Rothbury |
| DS3 | Do Something 3 | Alnwick to Ellingham dualling, online alignment and: 3. Morpeth Northern Bypass 4. Re-opening of the B6344 road to Rothbury |
| DS4 | Do Something 4 | Morpeth to Felton and Alnwick to Ellingham dualling, offline and online respectively and: 3. Morpeth Northern Bypass 4. Re-opening of the B6344 road to Rothbury |

3.3 Key findings from the strategic and value for money sections

The proposed road investment will facilitate economic growth in the region. Provision of improved road facilities for all users, especially the freight and logistics sector, will encourage economic prosperity. A study undertaken by NCC reports that dualling the A1 north of Newcastle could help to deliver wider economic benefits.

SGAR 3 Adjusted BCRs

- M2E – 0.95 (Poor VfM)

The VfM issue was first referred to HE Strategy & Planning for consideration with DfT in May 2017. The steer to proceed with the project was provided by DfT in August 2017, as the combined M2E BCR at that time had not significantly changed since the project entered the RIS with a BCR of 1.3.

In November 2018, the project team escalated the risk of the BCR dropping below 1.0 for the project, which was primarily due to the inclusion of a new O&M model, a drop in benefits from reduced greenhouse gas emissions and a substantial drop in accident benefits. The project was reviewed by HE's chief economist and an instruction was issued to the design consultant WSP to undertake further benefits & traffic analysis, in order to provide assurance around a further adjusted BCR figure.

In August 2019, TPG reviewed the new further adjusted BCR figures and associated benefits. Although this further analysis produced a M2E BCR of 1.1, it was only able to be given Red/Amber assurance. As described in section 1.3, further traffic modelling was carried out and the revised BCR is 0.95.

In September 2019, the project BCR and VfM issues were escalated to HE IC and urgent discussions commenced with DfT on the 8 October 2019. The outcome of these discussions concluded on 20 February 2020, when approval was received from DfT / HMT

to submit the DCO. As described in Section 1.2.1. Due to the delay in receiving approval, the decision was made to combine the separate DCO applications into a single combined DCO for the M2E project.

Following the drop from Low VfM to Poor VfM, we sought further approval from DfT to issue the legal Notice to commence the Statutory Powers, this approval was received in July 2020.

3.4 Recommendation – preferred option (for Outline Business Case)

The Preferred Route was announced on 5 September 2017, for the project, with separate options for the M2F and A2E sections, following the public consultation held in November/December 2016.

The green (offline) option was selected as the preferred route between Morpeth and Felton, as it was the most popular option presented to the public and presents the greatest benefits during construction.

The orange (online) option was selected as the preferred route between Alnwick and Ellingham. This option provides additional network resilience and overtaking opportunities by providing a dual carriageway standard of road.

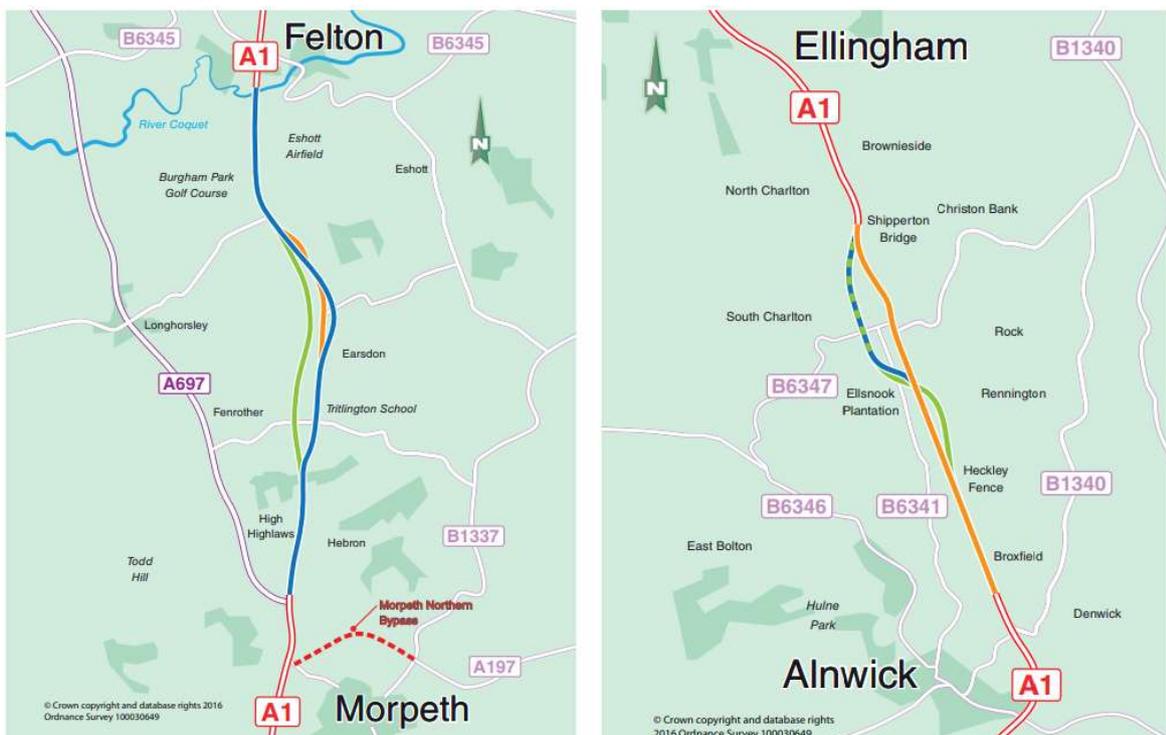


Figure 2 – Route options



Figure 3 - Start of the M2F Dualling section



Figure 4 - M2F New Split-Level Junction at Highlaws



Figure 5 - M2F New section of Dual Carriageway, Old A1 De-Trunked



Figure 6 - M2F New Split-Level Junction at Fenrother



Figure 7 - M2F New Overbridge at Causey Park



Figure 8 - M2F New Underbridge at Burgham



Figure 9 - M2F New Split-Level Junction at West Moor



Figure 10 - M2F New Southbound Bridge at the River Coquet



Figure 11 - A2E New Split-Level Junction at Charlton Mires

3.5 Long-list appraisal

As discussed in section 3.4, the project developed 3 separate options in PCF stage 2 for both parts of the project before taking two options forward in PCF stage 2. The options were similar in approach giving the option for either online widening or new carriageway.

All options were presented to the public as part of the consultation undertaken on the project in 2016. For M2F, the majority of respondents supported the Green (offline) option. For A2E, the majority of respondents supported the Orange (online) option. Both were recommended to go forward as the preferred option for the A1 project and it was announced in Sept 2017.

In terms of the economic and strategic assessment, both PRA options met the objectives stated in the CSR. They supported the local economy and HE's strategy, as described in the RIS and Delivery Plan. BCRs for both options were varied and both options offered a low value for money.

Statutory consultations were held in PCF stage 3 in June 2018 for M2F and February 2019 for A2E as part of the DCO process.

During PCF stage 3, an alternative design and construction solution for the new River Coquet Bridge was considered. All other aspects of the project remain the same. Both the aligned bridge pier and staggered bridge pier solution have been included in the DCO, however, only the aligned bridge pier solution has been assessed in the Environmental Impact Assessment, further assessments for the staggered bridge pier solution will take pace ahead of DCO examination.

3.6 Critical success factors assessment

The intervention specific objectives are as follows:

- Improve journey times on this route of strategic national importance.
- Improve network resilience and journey time reliability.
- Improve safety.
- Maintain access for local traffic whilst improving the conditions for strategic traffic.
- Facilitate future economic growth.
- Avoid, mitigate and compensate for potential impacts upon the built and natural environment and identify opportunities to provide a long-term and sustainable benefit to the environment.

3.7 Qualitative assessment

| Feature | Morpeth to Felton | Alnwick to Ellingham |
|-------------------|--|--|
| Air Quality | No significant impact on air quality. | No significant impact on air quality. |
| Cultural Heritage | There is a risk of disturbing unknown archaeological remains. | There is a lower risk of disturbing unknown archaeological remains, as the road does not deviate from the existing A1. |
| Landscape | There will be in impact on landscape where the road deviates from the existing | Online widening minimises the potential impact on landscape. |

| | | |
|---|--|--|
| | A1, however the visual impact on residential and business properties will decrease as the road moves further away. | |
| Nature Conservation | There will be a loss of habitat, however potential options for mitigation are being considered. | Loss of habitats is kept low due to online widening. |
| Geology and Soils | There will be loss of Grade 3 agricultural land, and a risk from contaminated land and mining which took place near Causey Park. | Agricultural land take is minimised due to online widening. There is limited risk from proximity to old mining areas. |
| Noise and Vibrations | There will be a reduction in noise and vibration in properties along the existing A1. Noise and vibration will increase where the new A1 is closer to existing properties than at present which will be mitigated by sound barriers. | The limited assessment carried out so far suggests that perceptible noise increases would be limited to the northern part of the project, while there would be perceptible noise reductions on some side roads due to the redistribution of traffic. |
| Effect on all Motorised Road Users | A safer, faster flowing road network will be provided, which is designed to modern highway standards. | A safer, faster flowing road network will be provided, which is designed to modern highway standards. |
| Community and private assets, including land take | Around 70 hectares of land take is required. The new junctions will improve access across the A1 for NMUs. | Around 20 hectares of land take is required. The new junctions will improve access across the A1 for NMUs. |
| Construction duration and impacts | Construction is expected to be 3 years. Impact on residents is expected to be low, as most of the construction will be offline. | Construction is expected to be 2 years. Impacts of construction will be higher due to the work being carried out on the current A1. |
| Safety | The road has been designed to meet required safety standards. | The road has been designed to meet required safety standards. |

3.8 Benefits assessments

The specific benefits the project is expected to bring are summarised below: -

M2F Section: The proposed Dual All-Purpose carriageway (D2AP) will consist of two carriageways, hard strips, no accesses except isolated existing access with left turns only, clearway, no minor junctions at grade, no gaps in the central reserve, full grade separation. This is a considerable increase in the level of road provision; in particular the severe enforcement of accesses restrictions and closure of the central reserve requiring grade separate junctions.

The project uses both online widening and off-line (approx. 6km) new build (approx. 7km) construction techniques to complete this dual link between Morpeth and Felton. The project also proposes 3 Compact Grade Separated Junctions (CGSJ's) at High Highlaws Farm, Fenrother Lane and West Moor Road. No private accesses are proposed directly from the D2AP with only balancing pond / maintenance accesses being envisaged from the mainline where alternatives from the side road network would prove to be too onerous.

This option will have a large beneficial impact on safety due to providing more capacity to overtake slow moving vehicles and removing at grade junctions. The option will require minor departures from standards as the offline alignment allows the option to avoid area of existing poor vertical and horizontal geometry, improving the safety of the route. The option will provide £42 million of safety benefits due to the larger area of existing A1 being left in-situ meaning more road (both new and old A1) with accident potential being factored into the modelling.

There are two distinct sections with regards to pavement design options on M2F, which consists of a new build offline section and an online section, which will incorporate part of the existing road alignment within the new. A determination of the most appropriate pavement options will include both technical requirements as well as consideration for whole life costs.

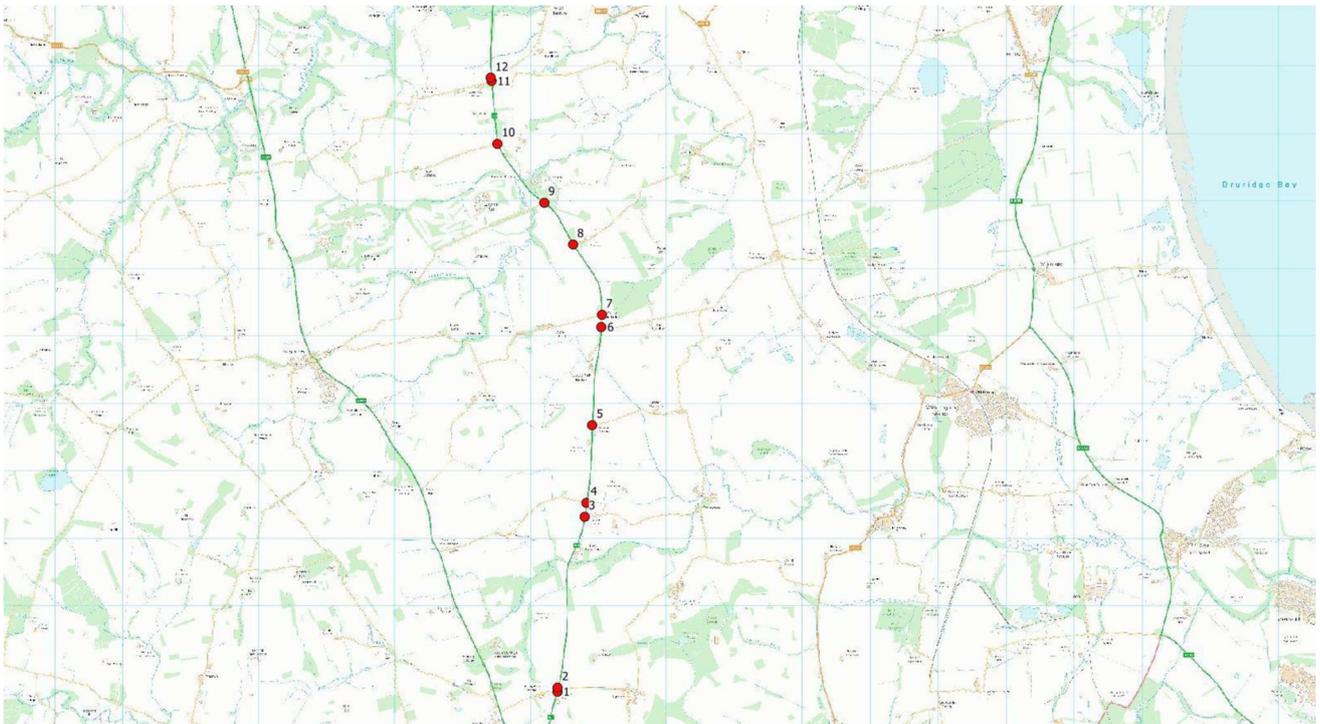


Figure 12 - Morpeth to Felton Sites

| Ref | Location |
|-----|-----------------|
| 1 | Highlaws Rd |
| 2 | Hebron Rd |
| 3 | Tritlington Rd |
| 4 | Fenrother Ln |
| 5 | Earsdon Rd |
| 6 | Widdrington Rd |
| 7 | Causey Park Rd |
| 8 | Eshott Road |
| 9 | Burgham Park Rd |
| 10 | Bywell Road |
| 11 | Felton Rd |
| 12 | West Moor Rd |

A1 Morpeth to Felton Summary Data

| | | | Observed Count Data - April/May 2015 (veh) | | | | | | | | |
|------|----------------------|-----|--|-----|-----|------------|-----|-----|---------|-----|-----|
| Site | Road Name | Dir | AM Peak | | | Inter Peak | | | PM Peak | | |
| | | | Car | LGV | HGV | Car | LGV | HGV | Car | LGV | HGV |
| 1 | Highlaws Rd (10) | EB | 36 | 3 | 3 | 47 | 2 | 2 | 61 | 3 | 2 |
| | | WB | 29 | 2 | 0 | 40 | 3 | 2 | 35 | 3 | 0 |
| 2 | Hebron Rd (11) | EB | 106 | 9 | 6 | 67 | 6 | 3 | 103 | 8 | 3 |
| | | WB | 79 | 5 | 1 | 58 | 5 | 2 | 68 | 7 | 1 |
| 3 | Tritlington Rd (13) | EB | 33 | 2 | 1 | 11 | 1 | 0 | 10 | 1 | 0 |
| | | WB | 12 | 3 | 0 | 11 | 3 | 0 | 16 | 6 | 0 |
| 4 | Fenrother Ln (12) | EB | 4 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 |
| | | WB | 2 | 1 | 0 | 4 | 0 | 0 | 4 | 0 | 0 |
| 6 | Widdrington Rd (15) | EB | 142 | 8 | 3 | 77 | 8 | 2 | 92 | 9 | 1 |
| | | WB | 71 | 13 | 2 | 86 | 7 | 2 | 156 | 12 | 1 |
| 7 | Causey Park Rd (14) | EB | 3 | 0 | 0 | 3 | 0 | 0 | 3 | 1 | 0 |
| | | WB | 4 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 0 |
| 8 | Eshott Road (16) | EB | 14 | 1 | 0 | 7 | 1 | 0 | 8 | 2 | 0 |
| | | WB | 7 | 2 | 0 | 8 | 1 | 0 | 10 | 2 | 0 |
| 9 | Burgham Park Rd (17) | NB | 26 | 2 | 1 | 22 | 2 | 0 | 26 | 3 | 0 |
| | | SB | 34 | 2 | 1 | 23 | 2 | 1 | 29 | 2 | 0 |
| 11 | Felton Rd (18) | EB | 79 | 5 | 2 | 55 | 4 | 1 | 57 | 3 | 2 |
| | | WB | 35 | 6 | 3 | 52 | 3 | 1 | 76 | 3 | 2 |

A2E Section: This option will have a moderate beneficial impact on safety. The option will provide £12 million (PVB, 2010 prices) of safety benefits due to providing more capacity to overtake slow moving vehicles and removing at grade junctions. However due to its online alignment, two departures have been identified as required to date.

Due to the online nature of this section, wherever possible the pavement designs will be concentrating on re-using the in-situ materials to minimise resource consumption and waste disposal. The intention is to provide pavement designs which maximise and extend the residual life of the existing components within the new construction. Alternative options based on innovation and best practice from other projects will also be explored.

Improving User Satisfaction: The proposed project is expected to provide a more positive journey experience to all road users due to the capacity enhancements and improved junction layouts. This will be facilitated by dualling and signage improvements, including NMU facilities and efficient road management.

3.9 Cost assessments

Cost assessments are based on the economic output from Highways England Commercial Services Division. Construction cost estimates were prepared by Highways England. The expenditure profiles are based upon cost estimates for each financial year prepared in 2016 Q1 prices and then inflated to outturn costs using HE projected construction related inflation.

These costs have then been discounted to 2010, based on a 3.5% per annum discount rate, adjusted to 2010 values using the GDP deflator series as published in the WebTAG Databook, and then converted to market prices by factoring by the indirect tax factor of 1.19.

Present Value of Cost (PVC) is the total cost of the project, discounted to the present value year of 2010, and converted to market prices, this is shown in the tables below.

Table 7 - M2F September 2019 Project Cost Rebased (PVC) to 2010

| £ | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total |
|--------------|--------------|---------------|---------------|---------------|--------------|------------|-----------|-----------|-----------|-----------|----------|----------------|
| Preparation | 1,532 | 6,999 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8,533 |
| Supervision | 0 | 0 | 961 | 1,130 | 587 | 91 | 0 | 0 | 0 | 0 | 0 | 2,769 |
| Works | 2,333 | 3,084 | 44,096 | 37,473 | 1,964 | 0 | 0 | 0 | 0 | 0 | 0 | 88,951 |
| Lands | 456 | 288 | 1,326 | 405 | 374 | 332 | 80 | 25 | 24 | 11 | 8 | 3,331 |
| Total | 4,322 | 10,372 | 46,385 | 39,008 | 2,925 | 423 | 80 | 25 | 24 | 11 | 8 | 103,584 |

Table 8 - A2E September 2019 Project Cost Rebased (PVC) to 2010

| £ | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total |
|--------------|--------------|--------------|---------------|---------------|------------|------------|-----------|-----------|----------|----------|----------|---------------|
| Preparation | 1,268 | 5,955 | 278 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7,501 |
| Supervision | 0 | 0 | 619 | 814 | 361 | 0 | 0 | 0 | 0 | 0 | 0 | 1,793 |
| Works | 0 | 0 | 29,053 | 25,697 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 54,750 |
| Lands | 196 | 124 | 456 | 278 | 202 | 122 | 42 | 11 | 8 | 5 | 2 | 1,444 |
| Total | 1,464 | 6,078 | 30,406 | 26,788 | 562 | 122 | 42 | 11 | 8 | 5 | 2 | 65,488 |

Table 9 - M2E September 2019 Project Cost Rebased (PVC) to 2010

| £ | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | Total |
|--------------|--------------|---------------|---------------|---------------|--------------|------------|------------|-----------|-----------|-----------|----------|----------------|
| Preparation | 2,560 | 12,080 | 258 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14,898 |
| Supervision | 0 | 0 | 1,394 | 1,714 | 765 | 77 | 0 | 0 | 0 | 0 | 0 | 3,950 |
| Works | 2,333 | 3,085 | 70,309 | 60,850 | 1,860 | 0 | 0 | 0 | 0 | 0 | 0 | 138,438 |
| Lands | 652 | 412 | 1,495 | 910 | 666 | 402 | 138 | 36 | 27 | 16 | 5 | 4,760 |
| Total | 5,546 | 15,576 | 73,457 | 63,475 | 3,291 | 479 | 138 | 36 | 27 | 16 | 5 | 162,046 |

3.10 Cost benefit analysis

The BCRs with the Core Benefits (RTF2015, PPM/PPK from WebTAG Dec 2017, TUBA 1.9.10), as well as with the Sensitivity Test Benefits (RTF2018, PPM/PPK from WebTAG May 2019, TUBA 1.9.13) have been calculated with this updated project cost and given in the further Tables below.

The Initial Benefits for the Core and Sensitivity Tests are shown in the Tables. The BCR is the same for the Core and for the Sensitivity Test. In all cases, the BCR has increased in comparison to those with the original project costs.

Table 10 - Core September 2019 Project Costs M2F Initial BCR

| Benefit Type | 1.9.10 Benefit – RTF 2015 (£000) | 1.9.13 Benefit – RTF 2018 (£000) |
|--------------|----------------------------------|----------------------------------|
| PVB | 90,171 | 93,441 |
| PVC | 100,315 | 100,315 |
| NPV | -10,144 | -6,874 |
| BCR | 0.9 | 0.9 |

Table 11 - Core September 2019 Project Costs A2E Initial BCR

| Benefit Type | 1.9.10 Benefit – RTF 2015 (£000) | 1.9.13 Benefit – RTF 2018 (£000) |
|--------------|----------------------------------|----------------------------------|
| PVB | 16,577 | 19,713 |
| PVC | 63,502 | 63,502 |
| NPV | -46,925 | -43,789 |
| BCR | 0.3 | 0.3 |

Table 12 - Core September 2019 Project Costs M2E Initial BCR

| Benefit Type | 1.9.10 Benefit – RTF 2015 (£000) | 1.9.13 Benefit – RTF 2018 (£000) |
|--------------|----------------------------------|----------------------------------|
| PVB | 98,105 | 103,981 |
| PVC | 156,792 | 156,792 |
| NPV | -58,687 | -52,811 |
| BCR | 0.6 | 0.7 |

The impact on the Adjusted PVB and BCR is summarised in Tables below. The table shows that the Adjusted BCR for the M2F and M2E increase in comparison with those for the original costs. For the A2E, the Adjusted BCR remains the same.

Table 13 - Core September 2019 Project Costs M2F Adjusted BCR

| Benefit Type | 1.9.10 Benefit – RTF 2015 (£000) | 1.9.13 Benefit – RTF 2018 (£000) |
|--------------|----------------------------------|----------------------------------|
| PVB | 117,628 | 116,736 |
| PVC | 100,315 | 100,315 |
| NPV | 17,313 | 16,421 |
| BCR | 1.2 | 1.2 |

Table 14 - Core September 2019 Project Costs A2E Adjusted BCR

| Benefit Type | 1.9.10 Benefit – RTF 2015 (£000) | 1.9.13 Benefit – RTF 2018 (£000) |
|--------------|----------------------------------|----------------------------------|
| PVB | 20,179 | 22,426 |
| PVC | 63,502 | 63,502 |
| NPV | -43,323 | -41,076 |
| BCR | 0.3 | 0.4 |

Table 15 - Core September 2019 Project Costs M2E Adjusted BCR

| Benefit Type | 1.9.10 Benefit – RTF 2015 (£000) | 1.9.13 Benefit – RTF 2018 (£000) |
|--------------|----------------------------------|----------------------------------|
| PVB | 130,357 | 132,023 |
| PVC | 156,792 | 156,792 |
| NPV | -26,435 | -24,769 |
| BCR | 0.8 | 0.8 |

3.11 Sensitivity and risk and issue management | risk profile

In addition to the core, it is expected that a high growth estimate will give an indication of the higher levels of benefits that may be possible for the project. Therefore, an equivalent sensitivity test has been undertaken, using a high estimate of growth for the same sensitivity test, for the M2E project.

A High Growth sensitivity test (based on RTF 2018, PPM/PPK from TAG May 2019 and TUBA 1.9.13) was undertaken to assess the potential upper benefit estimate for the M2E project. BCRs were calculated using the latest Project Costs from September 2019.

This test indicated that the Initial BCR would be 0.8, the Adjusted BCR 1.0. The VfM statement was updated and gave a BCR of 0.8. As described in **Section 1.3** this OBC has now been updated to reflect a revised VfM statement and an updated BCR of 0.95.

3.12 Options impacts

For more information on the impact of the preferred options, please see our [stage 2 Consultation Brochure](#).

3.13 Detailed benefit, cost and impact appraisal

The VfM category for the project is Poor, based on WebTAG guidance on VfM. The project is expected to open in 2024/2025 and benefits will begin to be realised at this point.

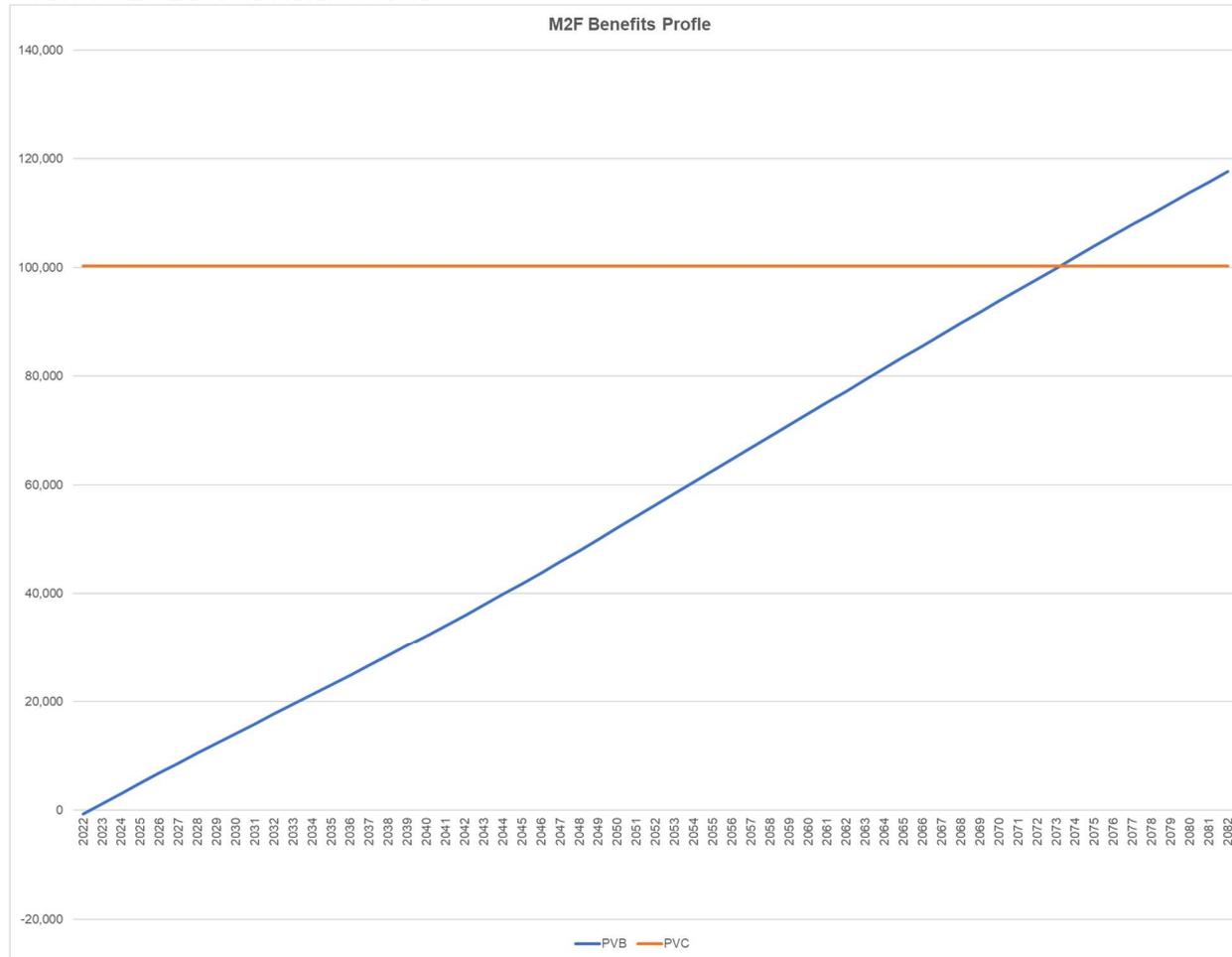
The VfM statement is included below and in **Annex A**.

| Key Impacts | | | |
|--|---|---|---|
| | Positive Contributions | | Negative Contributions |
| <i>Quantified</i> | Travel time savings Accident savings Improvements to air quality Agglomeration Network Resilience | | Greenhouse gases Increased noise Delays during construction |
| <i>Un-quantified</i> | Journey quality Driver frustration | | landscape, bio diversity and the historical environment. |
| | Element 1 Morpeth to Felton | Element 2 Alnwick to Ellingham | Preferred Option 3 Morpeth to Ellingham |
| PVC (£m) | 122.4 | 76.6 | 176.7 |
| PVB (£m) | 137.5 | 33.3 | 168.2 |
| BCR (adjusted) | 1.12 | 0.44 | 0.95 |
| Key Assumptions/Sensitivities | | | |
| <p>There is currently uncertainty around the scale of impacts relating to recent changes to GDP per capita and population growth forecasts as well as potential Covid-19 impacts. Once incorporated in to the TAG databook these wider changes are expected to present downside risks to the value for money of the project.</p> <p>The scale GHG emissions is uncertain: changes in the vehicle fleet mix to reflect the growth in electric vehicles is not accurately reflected in current guidance and is likely to lead to an overestimation.</p> <p>Governments commitment to a zero-carbon future also means that the monetary value of carbon is due to be reviewed, as an interim measure a high value of carbon sensitivity test reduces overall benefits. GHG dis-benefits would need to fall by 30% for the BCR to improve to 1.1.</p> <p>None of these sensitivities, either individually or in combination, is expected to materially change the judgment that this project will deliver Poor VfM</p> | | | |

3.14 Breakeven and whole life value assessment

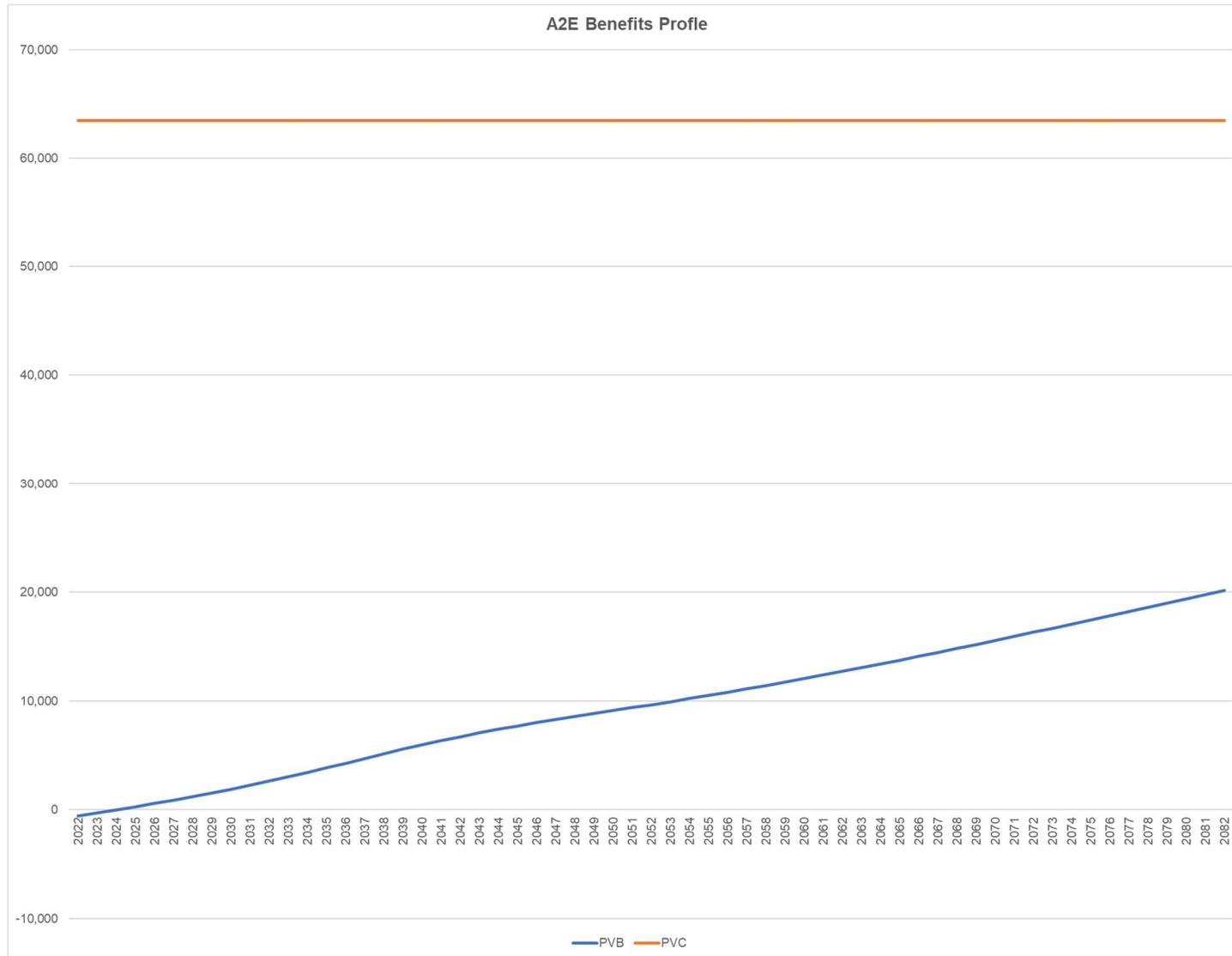
Based on the benefits of the quantitative appraisal, the breakeven date for the project would be as follows in the below Charts:

Chart 1 M2F Benefits Return Profile



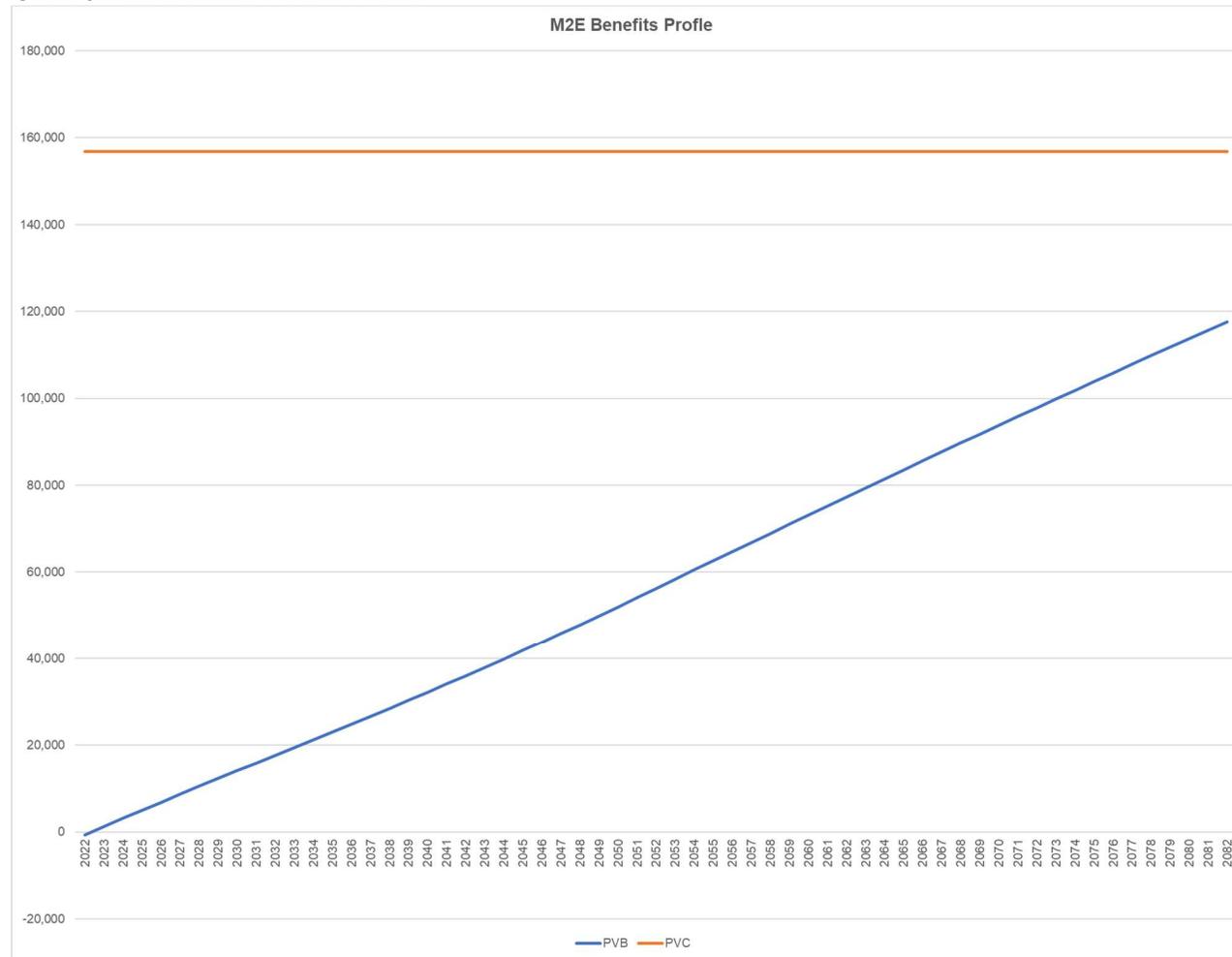
M2F breakeven date would be 2073

Chart 2 A2E Benefits Return Profile



A2E breakeven date is not reached within the 60-years appraisal period.

Chart 3 M2E Benefits Return Profile



M2E breakeven date is not reached within the 60-year appraisal period

Whole life assessments are in accordance with HE standard appraisal principles. Benefits are appraised over 60 years and a BCR established in line with delivery costs.

4. Commercial and procurement

The A1 Morpeth to Ellingham project is following the Regional Delivery Partnership (RDP) procurement strategy. The project is within DIP package B10+, which was awarded to Costain in December 2018. The DIP has progressed through mobilisation and due diligence, and has agreed the project budget and are now preparing for contract award. There is an early order in place with Costain, which is for Ground Investigation works for the River Coquet that is due to finish in November 2020. A separate early order has been set up for early stage 5 works following the acceptance of the DIP budget, which commenced at the start of September 2020 and will run until contract award in December 2020.

4.1 Required services

In March 2018, WSP were awarded the contract for PCF Stages 3 and 4 through CDF. The scope of this contract is primarily to develop the detailed design and prepare to submit the DCO at the end of Stage 3.

DLA Piper were awarded the contract for legal advisors in PCF Stages 3 and 4. This contract involves the writing of the DCO and involvement in the public hearings through the examination period of the process.

The main contracts currently in place to complete the options phase of the project are listed below:

Main contracts in operation on the project

| Partner | Scope of Service |
|-----------------------------------|--|
| WSP | WSP have been appointed through the CDF regional award for the North East regional allocation for Stages 3 and 4. |
| Valuation Office Agency | Land acquisition and negotiation services |
| DLA Piper | DLA Piper have been appointed to provide legal advice through DCO to SoW |
| Osborne | Osborne have been appointed to carry out intrusive surveys at the River Coquet and on the Alwick to Ellingham section. |
| Costain/Jacobs Partnership | Costain/Jacobs Partnership have been awarded the A1 Package as part of the RDP Tender process |

4.2 Market analysis

4.2.1 Supplier relationship

All suppliers currently engaged on the project are incentivised to improve performance throughout the tenure of their appointment. The model used to report and manage this process is the Collaborative Performance Framework (CPF), which is used to monitor how well the supplier is meeting requirements and to highlight areas where intervention may be necessary. CPF combines quantitative metrics based on hard data, with qualitative measures provided by behaviour based metrics. The framework is divided into 7 chosen metrics themes as follows:

- Designing for Whole Life safety

- Performance against project-specific efficiency targets and effect on whole life performance
- Quality Management and Key Deliverables
- Highways England calculation of the cumulative Supplier phase SPI
- Highways England calculation of the cumulative Supplier phase CPI
- The greatest variance between the monthly forecasts and the actual spend in the month
- The variance between the cumulative actual spend for the current financial year and the forecast spend for the current financial year

4.2.2 External factors

All procurement will be in line with UK and EU legislation.

4.3 Commercial and procurement strategy and procurement options

4.3.1 Commercial estimates / performance management /assurance

4.3.1.1 Procurement Strategy

The procurement strategy for the project has been developed through the RDP contract. This has been done at framework level, as opposed to project level.

4.3.1.2 Cost Estimate

The August 2018 Commercial Range Estimate was £309.6m and as part of the back to budget challenge at the time, a delivery strategy was developed to achieve the overall regional Operating Plan budget of £280.6m. This delivery strategy assumed efficiency savings of ██████, made up of ██████ in pavement design, with ██████ in efficiencies from the RDP procurement route. This was presented to HE IDC in October 2018 and approval to contract up to £280.6m was received as a result.

In September 2019, the DIP rates were applied to the August 2018 Commercial Range Estimate and an RDP estimate was produced at £261.6m and a DIP budget of ██████ was provided. This was based on Design Fix 2 (an early design fix within the Preliminary Design phase).

The design was developed further (Design Fix 3 for DCO) and a further Commercial Range Estimate of £374.4m was produced in March 2020. When the DIP rates were applied, this led to an updated RDP Estimate of £338.7m.

The table below shows the previous Commercial Estimates and sets out the latest RDP Estimate approved in March 2020.

| Estimate | Start of Works | Min (£m) | ML (£M) | Max (£m) |
|---|----------------|----------|---------|----------|
| Commercial Estimate Aug 2018 | Sep 20 | 204.3 | 309.6 | 477.6 |
| Project Budget approved @ HE IDC Oct 2018 | Sep 20 | N/A | 280.6 | N/A |
| RDP Central Estimate Sep 19 | Mar 21 | N/A | 261.6 | N/A |

| | | | | |
|-----------------------------|--------|-------|--------|-------|
| DIP Budget Sep 19 | Mar 21 | N/A | 245.1 | N/A |
| Commercial Estimate Mar 20 | Nov 21 | 229.2 | 374.4 | 587.3 |
| RDP Central Estimate Mar 20 | Nov 21 | N/A | 338.7 | N/A |
| DIP Budget Mar 20 | Nov 21 | N/A | ██████ | N/A |

A DIP budget has been agreed at ████████ which excludes the SAs as described in **Section 2.5.2**.

It has been agreed that it is not appropriate to use the DIP budget for IDC and IC decision making or for use within value for money assessments in this stage. Therefore, an RDP Estimate has been produced, between the original commercial estimate and the DIP budget, for use in the IDC and IC decision making and for use in VfM assessments.

4.3.1.3 Procurement timelines

In February 2018, WSP were appointed until the end of PCF Stage 4, this is due to be completed in January 2022.

PCF stages 5-7 will be delivered by the DIP through the RDP procurement strategy. In October 2018, the package contract B10, for the A1 M2E project north region, was awarded to Costain. The DIP has progressed through mobilisation and due diligence and is currently agreeing the project budget and closing out the matters arising to prepare for contract award.

An early order is in place with Costain for GI works for the River Coquet which is due to finish in November 2020. It is expected that Costain will be awarded the project contract for the A1 M2E project in December 2020, following endorsement by HE IDC and approval from HE IC in November 2020.

4.3.1.4 Incentive Mechanisms

The contractual arrangements between Highways England and the DIP will be an output from the RDP. The DIP will be incentivised against the DIP budget of ████████, which will be a post efficient target for the project.

4.3.1.5 Commercial Management

Commercial Management will be provided by the Project Controls service secured via mini competition under the SPAT's framework. This has been a national tender with suppliers allocated into one of six regions. RIP YNE region have Faithful & Gould, which is a four-year award from 2018 to 2022.

This involves the management of commercial tasks required in stage, including upskilling and training staff, and ensuring all suppliers deliver the commercial outputs they are contracted to do.

The commercial management service is provided based on a fixed percentage for the service depending on which stage the project is in. The percentages tendered are applied to the whole life costs of the project, with the exception of lands costs, monthly over the life of the project. The Development fixed percentage for F&G is ████████ and the Construction fixed percentage is ████████

4.4 Risk and issue management

4.4.1 Risk allocation and transfer

The DIP procurement strategy has numerous risk mitigation clauses built in. These allow HE to progress contract award with minimal risk. The risk mitigation clauses are:

- Any exit route is based on fair payment of actual cost.
- There is a 'terminate at will' clause for all projects – 'circuit breaker'. Exposure is actual costs only.
- A requirement to complete mobilisation deliverables prior to being appointed a project contract – quasi condition precedent means that suppliers will have been quality and behaviourally assured before being awarded project contracts.
- In addition, there are stage gate exit routes in the contract prior to DCO submission and Notice to Proceed.
- There is a defined 'not to exceed' cap specified for each project where the definition is equal to the SOFA or HE current expected funds available.
- At all stages financial commitments are fixed or capped costs or target costs with overspend exposure 'pain' carried fully by the supplier to the level of its Business OH and Profit.

4.4.2 Limits of liability

Limits of insurance liability have been agreed through RDP contracts, which were developed centrally with HE nominated insurance specialists. These will be confirmed at the time of award of each project in line with RDP tendered standards.

4.4.3 Human resources

Any potential movement of personnel will be considered in terms of people management, location and terms of conditions. It is not expected that any trade union implications will be applicable to the project.

4.5 Commercial and procurement recommendation

HE's approach to the RDP and it's refined commercial arrangements is to drive standardisation and alignment in delivery. RDP is the delivery route of choice for this project.

5. Affordability

5.1 Accounting impacts and tax treatment

5.1.1 Impact on capital and income/expenditure accounts

The accountancy treatment progressing through the Development Phase will be in line with standard HE practices. As the resources are being employed in the construction of a Capital asset, the policy is to capitalise these costs.

5.1.2 Impact on the balance sheet

The expenditure for this project will be treated as Capital AME (annually managed expenditure) with actual expenditure being incurred as Capital DEL (departmental expenditure limit).

5.1.3 Cash flow impacts, including tax implications

The tax and VAT implications of the preferred option will be in line with standard HE practices.

Non-recoverable VAT has been recalculated at 62% in line with the latest guidance from HM Treasury. This is reflected in the RDP Estimate and DIP budget. The value of NR VAT for the project totals £23,564,434.

Project costs are being accounted for on an accruals, rather than cash, basis.

5.1.4 Impact on the capital baseline (RIS funding)

The full project cost in V1.2 of the Capital Plan is £270.1m. The latest approved RDP estimate is £338.7m. This profile of the baseline is shown below including the expected spend against each roads period.

Capital Plan V1.2 and RDP Estimate profile

| | Pre-Roads Period 2 (RP2) | Roads Period 2 (RP2) | Roads Period 3 (RP3) | Total Outturn |
|----------------------------|-----------------------------|-------------------------|-------------------------|------------------|
| Capital Plan V1.2 | £24.1m | £246.0m | N/A | £270.1m |
| RDP Estimate March 2020 | £23.7m | £315.0m | N/A | £338.7m |

5.2 Financial appraisal

5.2.1 Full financial model, including assumptions

The current forecast reflects the DIP budget, excluding the SAs described in **Section 2.5.2** and incorporating the efficiencies agreed with the DIP.

As it has been agreed that it is not appropriate to use the DIP budget for HE IDC and HE IC decision making or for use within the VfM assessments at this stage, the affordability is considered using the RDP Estimate of £338.7m.

As described in **Section 1.5**, this project is currently £68.6m above both the V1.2 of the Capital Plan and the Operational Plan. The project is seeking approval through change control to drawdown this shortfall from the Portfolio Risk pot.

5.2.2 Efficiency plan

The efficiency register is reviewed regularly and submitted to the Regional Efficiency Lead on a bi-monthly basis. The efficiency target for this project is £4.2m in RIS1 and has been set using the actual/forecast spend for this project during RIS1 compared to other North-East projects in the region. The target contributes to the overall YNE target of £86.89m and is to be achieved by March 2020. In total, £24.4m efficiencies were identified in RP1, of which, £1.7m have been fully assured for RP1. The rest are to be realised in RP2 (e.g. £21m is in pavement alone that won't be realised until construction). The register is reviewed monthly and assured by Commercial Intelligence and RIP Programme Office and can be found here: [A1 in Northumberland Efficiency Register](#).

5.2.3 Funding profile and affordability

The current forecast (based on the RDP Estimate), Capital Plan and DIP budget are shown in the table below:

Whole Project Financials

| | Pre-Roads Period 2 (RP2) | Roads Period 2 (RP2) | Roads Period 3 (RP3) | Total Outturn |
|---------------------------------|--------------------------|----------------------|----------------------|---------------|
| Capital Plan V1.2 | £24.1m | £246.0m | N/A | £270.1m |
| RDP Estimate (current forecast) | £23.7m | £315.0m | N/A | £338.7m |

5.2.4 Budget management arrangements, including classification

The Project Identification Number (PIN) is 551459 and the expenditure type is Capital funding and funded by RIP North Directorate. This is one project with one PIN and one funding stream, however it is being delivered in two phases.

There are no third-party contributions external to the company and is being managed by the RIP YNE Development Cost Centre, 3050.

In October 2018, HE IDC and IC approved:

- A full project budget of £280.6m for A1 Morpeth to Ellingham comprising:
 - **£35.5m Development Phase budget, comprising;**
 - **£15.1m Initial Development Phase** (stages 3-4) previously approved.
 - **£9.5m for Lands** previously approved
 - **£10.9m Development Phase (stage 5) budget**, subject to the BCR remaining at 1 or above.
 - **£6.7m** of advanced Construction phase funding for advanced stats diversions
 - **Approval to contract up to £241.56m Construction phase.** This includes £4.7m of advanced construction phase budget, previously approved by HE Board, for the early materials order and land purchase (£0.5m) for the diversion of a high-pressure gas main.

The project is seeking approval through Change Control to draw down £68.6m of Portfolio Risk.

The project will also be returning to HE IDC on 11 November 2020 where it seeks to:

- **Endorse** a funding request of £17.9m as set out in the table below:

| Phase | Previously Approved | Funding Request | Total incl approval |
|--------------|---------------------|-----------------|---------------------|
| Options | £3.6m | £0.0m | £3.6m |
| Development | £26.0m | £16.0m | £42.0m |
| Construction | £6.7m | £0.0m | £6.7m |
| Lands | £9.5m | £2.0m | £11.5m |
| Total | £45.8m | £18.0m | £63.9m |

- **Endorse** an increased 'Approval to Contract' within the RDP estimate of £338.7m.

If this request is endorsed by HE IDC, the project will present this to HE IC on 24 November 2020 for final approval.

The project is also required to return to HE IDC and HE IC in PCF Stage 5 for approval prior to proceeding to construction. If the project has failed to meet the post efficiency operational baseline during design and development, the project will be brought back to HE IC with a recommendation on how to proceed.

5.3 Risk and issue management | affordability risks

Capital Plan V1.2 for the project is £270.1m and the RDP Estimate is £338.7m. A draft DIP budget of [REDACTED], excluding SAs valued at [REDACTED], has been produced and agreed with the DIP.

5.4 Affordability recommendation

The A1 M2E project is currently in PCF Stage 4 and an RDP Estimate was produced in March 2020. The proposed cost of the project is £338.7m (excluding Portfolio Risk).

The Capital Plan V1.2 and Operational Plan V1.2 are £270.1m. The latest RDP Estimate (March 2020) is £338.7m and the agreed DIP budget is [REDACTED]. This is above the Capital Plan and Operational Plan.

The project is seeking approval through change control to drawdown £68.6m from Portfolio Risk. The project is also being presented to HE IDC on 11 November 2020 to seek endorsement to enter into contract with Costain up to the limit of the RDP Central Estimate. If successful, final approval will be sought from HE IC on 24 November 2020.

If this change is not approved, there is a contingency plan to deliver the project, this would mean a different delivery strategy for the project and is set out in **Section 6.4**

6. Project and programme management - deliverability

6.1 Management arrangements

6.1.1 Transition and implementation plans

WSP are the current design consultants and their scope of works is for completion of PCF Stages 3 and 4. The DIP's commission will cover PCF Stages 5, 6 and 7 and is detailed in section 4.1. PCF Stages 4 and 5 will run concurrently and although the design will transition from WSP over to the DIP, WSP will continue to be involved through the DCO element of PCF Stage 4, although in a reduced capacity than at present.

6.1.2 People - employee workforce or other workers

Details of the procurement of third party contractor and consultancy services are detailed in section 4.1. There are no anticipated additional Non-Employment Worker requirements.

6.1.3 Stakeholder and communications

More information on stakeholder and communications can be found in the latest plan here: [A1iN Comms Plan \(updated for A2E SGAR 3\).docx](#)

6.1.4 Change and control management

CEMAR is used to manage the contract with WSP during PCF stages 3 and 4. A number of tasks are communicated through CEMAR including:

- Early Warnings
- Compensation Events
- Payment
- Programme Submission
- Quotations
- Instructions
- Test/Inspection, searches and defects.

Changes are documented via CEMAR and approved by the Project Manager in consultation with the Commercial Manager and/or SRO, as required, and dependent on the level of change.

Any changes that the Project Manager considers could result in exceeding tolerance against in year or phase budgets, baselines for the stage, phase or affect the project's likelihood to meet any of its Transport Objectives, are escalated to Project Committee as required.

The [CE and EW change log](#) for all suppliers is maintained by the project team.

6.1.5 Risk and issues management

A joint risk management strategy has been produced for all RIP YNE projects to outline the processes of risk management in accordance with APM guidance and the HE Risk Management Manual throughout, to ensure a consistent approach is taken. Risk Management is executed in accordance with the RIP YNE Risk Management Plan and project level PCF product A1M2E Risk Management Plan: [SGAR 3 Risk Management Plan.xlsx](#).

Risks for the project are managed using Xactium, as described in 4.4.1. The link to the risk register is [A1 M2E Risk Register 23.09.2020.xlsx](#)

6.1.6 Benefits realisation plan

A [Benefits Realisation Management Plan](#) was produced during PCF Stage 1 and refreshed in PCF Stage 2. A Benefits Workshop was held in June 2017. The workshop was an opportunity to review the project and ensure that the project achieves and optimises positive outcomes. A benefits register was subsequently developed, and a benefits mapping exercise was undertaken to fully explore the benefits and to ensure they link back into the CSR and DfT's objectives.

Now that the project has moved into PCF Stage 4, the Benefits Realisation Evaluation Plan (BREP) will be updated. As part of this plan, a programme of monitoring will be established from pre-construction, through construction and for a period of up to five years post the project opening to traffic.

6.2 Programme/project management plan and assessment

In accordance with MPI 59, the project has established monthly project committees accountable to the regional committee for the success of the project.

The project organogram is contained in **Annex D**.

The project is managed in accordance with PCF and, as such, the Stage Management Plan and Project Management Plan have been approved. They are included below:

[M2E PMP New Template .docx](#) and [Stage 4 - Stage Management Plan](#)

For a more detailed assurance overview of the project please refer to the IAAP under **6.3.1**.

Reporting

Throughout PCF Stage 4, monthly progress review meetings are held to review the progress of the project against the scope of delivery of Stage 4.

In addition, the Supplier also reports progress at the following forums:

- Weekly Collaborative planning calls and tracker
- Collaborative planning workshops (as required)
- Monthly Clause 32 programme
- Month end finance reviews
- Monthly DCO meetings
- Stakeholder meeting update (as required)
- Weekly change call
- Quarterly CPF submissions

Internally, the HE project team provide the following status updates

- Project committees are held monthly or as required.
- HE Monthly Performance Review (MPR) meetings are held on Working Day 2 of each month.

6.2.1 Work streams

Within the project there are two key components in the current stage, the client and the supply chain team (this includes a Buildability supplier/Principal Contractor for GI Surveys and a Principal Designer). The client team is also getting legal support from DLA Piper.

From PCF Stage 5 onwards, the two key components will be the client and the DIP. The client team will include any Technical Assurance and Commercial project controls resource. Accountabilities of these functions are detailed below.

Internal Client Team – key accountabilities:

- Project management
- Stakeholder management
- Governance and assurance
- Business case and benefits realisation
- Value Management
- Risk Management
- Discharging Client duties under the CDM Regulations
- Contract management

External Design/D&B team – key accountabilities:

- Performing the role of the Principal Designer under the CDM regulations
- Performing the role of the Principal Contractor under the CDM regulations
- Delivery of the detailed design
- Construction works
- Completion of all applicable PCF products

- Monitoring spend to comply with monthly and annual forecast tolerances
- Assisting the client team with their duties where required

The overall accountability of the project governance sits with the Regional Sponsor, supported by the Project Sponsor. The overall accountability of the project delivery sits with the Regional Delivery Director.

6.3 Programme/project reviews

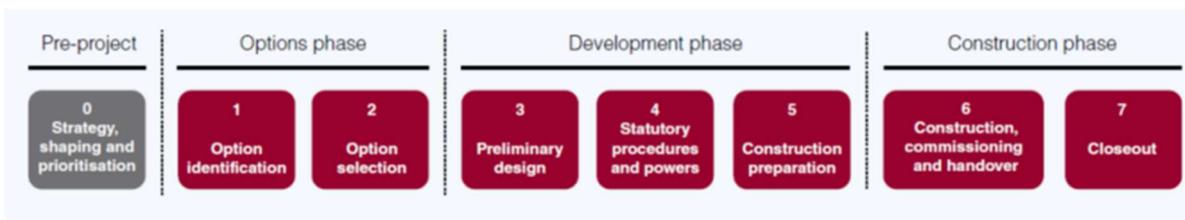
6.3.1 Reviews completed

The IAAP provides a detailed assurance overview of the project and the outcomes achieved to date, and is linked here [A1 M2E IAAP v8.0.xlsx](#).

6.3.2 Review relating to this business case stage

The OBC was prepared for the Development Phase, and was updated and signed off prior to SGAR 3 and the submission of the DCO application. This OBC has now been updated following the sign off of the revised estimate and refreshed economics. This will be presented to HE IDC and HE IC in November 2020, for approval to enter into project contract.

6.3.3 Project evaluation reviews



The project is following the PCF lifecycle with reviews at the end of each stage. In addition to this, Independent Assurance Reviews (IAR) will be scheduled at appropriate points. Approval will also be sought through the IDC process when moving into each phase.

The key dates for the project reviews can be seen below:

- Stage Gate Assessment Review 1 - Approval to continue to Stage 2 was given with a green rating on 16 September 2016
- Gateway Review 1 was carried out by independent reviewers in July 2016, awarding an Amber/Red rating due to affordability grounds of the project at this point in time.
- Stage Gate Assessment Review 2 - Green award was given in May 2017 and approval to proceed to Stage 3 was given.
- Interim Stage Gate Assessment Review 3 (Morpeth to Felton) - Green award was given on 9 May 2018.
- PAR (M2E) in advance of RDP approval to contract – Amber rating was given in September 2018.
- IAR 3a (M2F) 1-3 October 2019 – Red rating.
- SGAR 3 (M2F) 7 October 2019 – Red / Amber rating.
- Interim SGAR 3 (M2E) 6 April 2020– Green rating
- IAR 3a (M2E) 18-20 May 2020 – Amber/Green rating

- SGAR 3 (M2E) 6 July 2020 – Amber
- M2E SGAR 4 – January 2022
- SGAR 5 – February 2022
- SGAR 6 – October 2024
- SGAR 7 – October 2025

6.3.4 Post implementation review

No post implementation reviews are planned at this moment in time.

6.3.5 Post project review

No post project reviews are planned at this time.

6.3.6 Lessons learnt

The project team has taken an active approach to ensure lessons and best practice for other projects are taken on board and utilised for best delivery of this project. In addition to this, the project team also share knowledge and [lessons learnt](#) on this project with other projects within HE.

6.4 Contingencies and dependencies

Should this request be not approved by HE IDC and/or HE IC, it is proposed to deliver the Morpeth to Felton section first in RIS 2 and then to seek funding to deliver the Alnwick to Ellingham section in RIS 3.

Morpeth to Felton would be delivered at an estimated cost of £236.0m. Included in this budget is Alnwick to Ellingham's lands estimate, as landowners may insist that the land is purchased once the DCO comes into effect.

To use the same DCO powers, the Alnwick to Ellingham section must be delivered no more than 5 years later. It is proposed to fully design the project to enable the start of construction of the Alnwick to Ellingham section on approval of the additional funding.

To de-risk and speed up the delivery of Alnwick to Ellingham in RIS 3, there is a potential for works of up to £34.0m within the Alnwick to Ellingham section within RIS 2, which could include advanced Statutory Undertaker works (£12.0m), and Charlton Mires Compact Grade Separated Junction (£20.0m). The Charlton Mires Junction improvement would bring immediate benefits to the project.

The estimated additional cost of the postponement of the Alnwick to Ellingham section to a 2025/2026 SoW is estimated to be £16.0m, to take into account inflation, extended prelims and demobilisation/remobilisation.

Note - the Delivery Plan 2020-2025 sets out the following commitments for this project:

- Start of Works (SoW) 2022/2023 Q2
- Open for Traffic (OfT) 2024/2025

Note – should there be a decision to progress the contingency plan, there will be a need to:

- Change the Delivery Plan commitment for the OfT. The Delivery Plan commitment would only be met by the Morpeth to Felton section.

- Change the procurement strategy. The DIP budget realignment and the continuation of design delivery would result in a need to extend the existing Early Orders to allow time to make all of the necessary governance and contract changes.

A financial profile has been developed to demonstrate the change in cost pressure, as a result of implementing this contingency plan.

6.4.1 Dependencies

In developing the project further, a comprehensive risk log is being maintained as part of the management case. The delivery of the improvements for the A1 M2E project will be dependent on these risks either not arising or being mitigated so that the delivery is not affected.

Internal

- Cost changes; possible missing significant sums at this stage including statutory undertakings.
- Statutory processes; the time and cost to acquire the land required to implement the project.
- Acceptance; potential opposition and challenges to the project.
- Consultation; there is the potential for delays to delivery because of issues raised during consultation.
- Design.
- Construction.

External

- Strategic issues; such as changes in Government priorities and/or lack of support from local authorities.
- Traffic patterns and demands at the junctions could be affected by development plans changing in Gateshead and Newcastle.

The project is currently being delivered as part of the RIP programme. There are no dependencies on other projects or programmes. However, there are several projects in and around the A1 in the North East that are due for construction during 2021/22/23. A plan has been developed for the project to understand and mitigate impacts on the Customer during construction, and the sequencing of the construction will be further developed with liaison with these other projects during PCF Stages 4 & 5.

6.5 Findings and conclusion

The management case sets out the RIP approach to project management, and confirms that this project is being managed in line with this approach. All stage gate and governance processes are followed, which ensure a health check of the project is undertaken on a regular basis, and the project outcomes and value for money is considered on a regular basis.

7. Annexes

7.1 Annex A – Value for Money Statement

The VfM statement is included below. The VfM for the project is Poor.

| Value for Money Statement | | | |
|--|---|--|---|
| Value for Money Category | | Poor | |
| RIS 1: A1 Morpeth to Ellingham | | | |
| PCF Stage: 4 | | | |
| Summary | | | |
| <p>The scheme is Poor VfM with a BCR of 0.95. Updated benefit estimation including the calculation of benefits accruing to road users at night time and weekends have increased the overall benefits of the scheme but there has also been an increase in cost estimation which limits the improvement to the BCR. Negative impacts from GHGs are known to be overstated as well but this is unlikely to affect the VfM rating.</p> <p>The A1 in Northumberland forms an important route between England and Scotland and is important to the local Functional Economic Area. As one of the few sections of the road that are single carriageway journey times can be unreliable and the suffer from congestion. A lack of suitable alternate routes (especially for good vehicles) leads to a lack of network resilience. This scheme will upgrade two sections of the road from single to dual carriageway with associated junction improvements. By doing so the scheme will address the modest levels of congestion experienced during the day on weekdays. But there will also be some improvement to journey times at night and over the weekend as speed limits on dual carriageways are greater than those on single carriageways leading to reduced travel times during free-flow periods. Revised modelling means this is now captured in the BCR. Dual carriageways offer greater resilience in the event of minor incidents allowing greater journey time reliability; they are also safer than single carriageways these benefits have now been monetised and show a slight positive benefit.</p> | | | |
| Previous VfM Status: . | | | |
| Last VfM: poor Change: decreased from low | Date: 21/11/18 | Costs: <input checked="" type="checkbox"/> increase | Benefits: <input checked="" type="checkbox"/> increase |
| Key Impacts | | | |
| | Positive Contributions | | Negative Contributions |
| <i>Quantified</i> | Travel time savings Accident savings Improvements to air quality Agglomeration Network Resilience | | Greenhouse gases Increased noise Delays during construction |
| <i>Un-quantified</i> | Journey quality Driver frustration | | landscape, bio diversity and the historical environment. |
| | Element 1 Morpeth to Felton | Element 2 Alnwick to Ellingham | Preferred Option 3 Morpeth to Ellingham |
| PVC (£m) | 122.4 | 76.6 | 176.7 |
| PVB (£m) | 137.5 | 33.3 | 168.2 |
| BCR (adjusted) | 1.12 | 0.44 | 0.95 |
| Key Assumptions/Sensitivities | | | |

There is currently uncertainty around the scale of impacts relating to recent changes to GDP per capita and population growth forecasts as well as potential Covid-19 impacts. Once incorporated in to the TAG databook these wider changes are expected to present downside risks to the value for money of the scheme.

The scale GHG emissions is uncertain: changes in the vehicle fleet mix to reflect the growth in electric vehicles is not accurately reflected in current guidance and is likely to lead to an overestimation.

Governments commitment to a zero-carbon future also means that the monetary value of carbon is due to be reviewed, as an interim measure a high value of carbon sensitivity test reduces overall benefits. GHG dis-benefits would need to fall by 30% for the BCR to improve to 1.1.

None of these sensitivities, either individually or in combination, is expected to materially change the judgment that this scheme will deliver Poor VfM

| | | | |
|---------------|------------|--------------|------------|
| Author | [REDACTED] | Date: | 15/07/2020 |
|---------------|------------|--------------|------------|

7.2 Annex B – Analytical Assurance Statement

A1 in Northumberland: Morpeth to Ellingham - ****INTERIM**** PCF Stage 4

13 July 2020

Analytical Assurance Statement: 3rd Line of Defence

| Appropriateness | Compliance | Uncertainty | Fit for Purpose |
|-----------------|------------------|------------------|------------------|
| Amber | Amber/Red | Amber/Red | Amber/Red |
| Project Lead | [Redacted] | Lead Assurer | [Redacted] |
| Analytic Lead | [Redacted] (WSP) | | [Redacted] |
| Subject Matter | Traffic | | Commercial |
| Assurers | Environment | | Economics |

This statement reflects the *current position*, in mid-July 2020 (mid-PCF4).

An update will be required once the ongoing analysis for the current project stage (PCF4) has concluded.

Regarding, economics and costs, the analysis conducted for the core results appears generally appropriate and compliant. Traffic analysis has been shown to have some methodological shortcomings, which provide potential scope for challenge; however, sensitivity testing appears to show that these are largely inconsequential. However, significant concerns are raised regarding the environmental analysis (which has not been updated since the previous stage).

Overall, therefore, the assurance at this time is considered **Amber/Red**.

It should be noted that any results based on the 'Central (Point) Estimate' costs would receive a notably lower level of assurance.

Traffic

The base year model utilises values from the (old) 2017 TAG Databook, but has been calibrated and validated to TAG criteria set out in Unit M2. Forecasting assumptions have been developed in line with TAG Unit M4, including variable demand and using the latest NTEMv7.2. Since the previous stage, forecasts have been updated based on RTF18. However, the current traffic forecasts and TUBA economics are based on the (old) 2019 TAG Databook values. Standard 'high' and 'low' growth scenarios have been assessed. The economic assessment was undertaken, using standard approaches, for three forecast years. However, traffic modelling and economic assessment are based on an assumed opening year of 2023 rather than the anticipated 2024. A sensitivity test has been conducted which indicates that the differences are not significant. Wider Impacts – WITA analysis – have been reviewed and approved by the business partners from both Transport Planning and Economics Groups.

Regarding traffic modelling, the assurance at this time is **Amber**.

Environment

The PCF Stage 3 environmental information has been used for the current Stage 4 work: No additional environmental appraisal or assessment work has been carried out for this stage.

The PCF Stage 3 environmental work had a red assurance rating [at the time]. This was due to a number of reasons including the confusing structure and presentation of the environmental assessment in the ES and areas of high environmental risk that were not addressed in PCF Stage 3, and which therefore still need addressing.

It is difficult to understand what environmental appraisal information has been included in the Stage 4 work, and whether this was reviewed in PCF Stage 3. Furthermore, there have been changes to the traffic model since PCF Stage 3 that will not be reflected in the PCF Stage 3 environmental analysis reported in this Stage 4 work.

Therefore, the assurance rating for this environmental analytical work is **Red**.

Commercial

Formal Estimate (released 17 Mar 2020): The scheme developing estimate was prepared in accordance with standard Highways England estimating processes and is appropriate at this stage of the scheme assessment. The assurance should be considered **Green**.

Central Estimate (released 17 Mar 2020): Produced using the most likely point estimate of the assured option and utilising tendered rates, percentages and lumpsums from the RDP framework. The central estimate (point estimate) should be used as a draft budget for setting and agreeing a contractual budget and is deemed appropriate for this purpose. The assurance should be considered **Amber** due to:

- o This scheme will be delivered through the RDP framework using the regional DIP contractor, Costain
- o This central estimate (draft budget), based on the most likely of the range estimate, is conditional upon acceptance by Costain

There is scope for challenge in the following areas:

- Pence per kilometre (PPK) and pence per minute (PPM) cost parameters for the base year SATURN model are derived from the 2017 TAG Databook values and not the latest (July 2020) release.
- PPK and PPM cost parameters for the SATURN model *forecast years* are derived from the 2019 TAG Databook values and not the latest (July 2020) release.
- The appraisal assumes an opening year of 2023, rather than 2024, leading to errors in forecast flows and economic discounting.
- A number of benefits have been calculated utilising relatively new or novel methodologies:
 - o Transport Planning Group (TPG) spreadsheet analysis has been used to calculate non-modelled period benefits: off peak, weekend, summer and bank holidays. These have lower assurance than using a fully calibrated model, but are considered suitably robust for inclusion in the economic assessment of the scheme.
 - o TPG method applied for localised severity splits in COBALT. The method has been used on other schemes and accepted by DfT analysts. The method has also been approved by HE appraisal methods steering group.
 - o TPG method used for calculating Journey Time Reliability benefits, instead of TAG 'Stress' method. This method has previously been accepted by DfT analysts on other schemes.
 - o Resilience benefits have been calculated using emerging methodologies in draft HE guidance.
- Areas of high environmental risk remain unaddressed by the analysis.

The subject of this Analytic Assurance Statement is part of a staged decision-making process: **Yes**

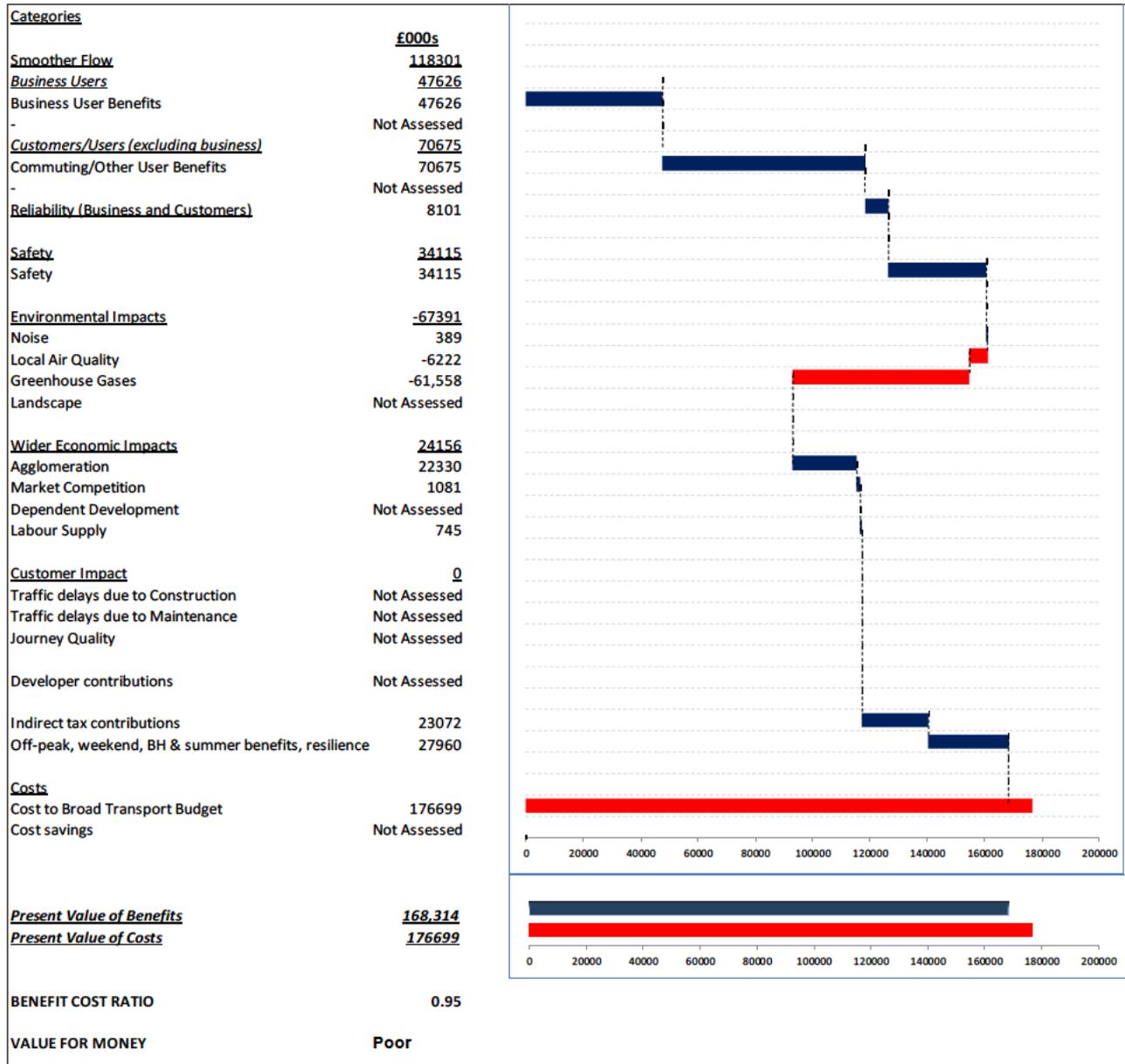
If the scope and quality of the analysis does not change during the next stage, the outcome of the next stage would be:

| Appropriateness | Compliance | Uncertainty | Fit for Purpose |
|-----------------|------------------|------------------|------------------|
| Amber | Amber/Red | Amber/Red | Amber/Red |

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7.3 Annex C – Waterfall Chart

Monetised Costs and Benefits and KPIs for A1 Morpeth to Ellingham:



7.4 Annex D: Summary of Key Performance Indicators

| Strategic Outcome | KPI | Things to Consider | Project Contribution – Qualitative | Project Contribution - Quantitative |
|--------------------------------------|--|---|--|--|
| Improving safety for all | Ongoing reduction in the number of people killed or seriously injured on the SRN to support a decrease of at least 50% by the end of 2025 against the 2005-09 average baseline. | <ul style="list-style-type: none"> The total number of people killed or injured on the SRN. The number of non-motorised and motorcyclist users killed or injured on the SRN. Disaggregation will be provided by road user group to assist understanding of the PI, but are not considered PIs in their own right. The number of injury collisions on the SRN. The accident frequency rate for Highways England staff and supply chain staff based on RIDDOR42 incidents and normalised by the number of hours worked in a year. The % of traffic using iRAP 3* or above rated roads | <p>_____</p> <p>Modern dual-carriageway standard to Ellingham will reduce driver stress/ improve safety. Junction improvements and overtaking lanes will also reduce driver stress and improve safety.</p> | Morpeth to Ellingham: Reduction of a total 414 accidents of which 17 are fatal and 125 seriously injured. |
| Providing fast and reliable journeys | <p>Average delay Difference between the observed travel time and the speed limit travel time (seconds per vehicle per mile).</p> <p>Ambition: Performance to be no worse at the end of RP2 than it is at the end of RP1. Highways England will be required to demonstrate how it has acted to reduce delays in support of this ambition.</p> | <ul style="list-style-type: none"> Delay on smart motorways: average delay (seconds per vehicle mile) observed on smart motorways compared to all vehicles travelling at upper limit for variable speed limit sections. Delay from roadworks: average additional delay owing to roadworks, compared to a benchmark journey time before roadworks were in place. Calculated as average annual delay (minutes per hour travelled). Journey time reliability: measured as the average difference between observed travel time and the profile (normal) travel time. Delay on gateway routes: average delay (seconds per vehicle mile) observed on gateway routes compared to all vehicles travelling at speed limit. Average speed: average speed (mph) whilst travelling on the SRN. | The provision of dual carriageway and overtaking sections will enable faster moving traffic to overtake slower moving vehicles; this will decrease the average journey time. | Morpeth to Felton and Alnwick to Ellingham (DS4): £68m of journey time benefit generated from Stage 3 analysis. The majority is generated by improvements to journey time between 0 and 5 minutes for Commute, Business and Other. |

| | | | | |
|---|--|---|---|--|
| <p>Providing fast and reliable journeys</p> | <p>Network availability Percentage of the network free from traffic restrictions owing to roadworks. Target: Achieve 97.5% lane availability in 2020-21. Existing metric to be replaced by a new expanded metric with target based on baselining work undertaken during 2020-21.</p> | <ul style="list-style-type: none"> • Delay on smart motorways: average delay (seconds per vehicle mile) observed on smart motorways compared to all vehicles travelling at upper limit for variable speed limit sections. • Delay from roadworks: average additional delay owing to roadworks, compared to a benchmark journey time before roadworks were in place. Calculated as average annual delay (minutes per hour travelled). • Journey time reliability: measured as the average difference between observed travel time and the profile (normal) travel time. • Delay on gateway routes: average delay (seconds per vehicle mile) observed on gateway routes compared to all vehicles travelling at speed limit. • Average speed: average speed (mph) whilst travelling on the SRN. | <p>Providing an additional lane on the A1 will improve network resilience by providing more capacity on the network that will enable the network to recover more quickly following an incident. It will provide an extra lane that can be used in the event of a break down or blockage to ensure that traffic can continue to flow. This will also minimise disruption when future maintenance activities are undertaken, where a lane closure would be required.</p> | <p>Morpeth to Felton and Alnwick to Ellingham (DS4): £68m of journey time benefit generated from Stage 32 analysis. The majority is generated by improvements to journey time between 0 and 5 minutes for Commute, Business and Other.</p> |
| <p>Providing fast and reliable journeys</p> | <p>Incident clearance rate Percentage of incidents cleared within one hour, based on 24-hour coverage. Target: 86% of motorway incidents cleared within one hour.</p> | <ul style="list-style-type: none"> • Delay on smart motorways: average delay (seconds per vehicle mile) observed on smart motorways compared to all vehicles travelling at upper limit for variable speed limit sections. • Delay from roadworks: average additional delay owing to roadworks, compared to a benchmark journey time before roadworks were in place. Calculated as average annual delay (minutes per hour travelled). • Journey time reliability: measured as the average difference between observed travel time and the profile (normal) travel time. • Delay on gateway routes: average delay (seconds per vehicle mile) observed on gateway routes compared to all vehicles travelling at speed limit. • Average speed: average speed (mph) whilst travelling on the SRN. | <p>Providing an additional lane on the A1 will improve network resilience by providing more capacity on the network that will enable the network to recover more quickly following an incident. It will provide an extra lane that can be used in the event of a break down or blockage to ensure that traffic can continue to flow. This will also minimise disruption when future maintenance activities are undertaken, where a lane closure would be required.</p> <p>The RDP are to put forward proposals for timely operation for the vehicle recovery service at all times in stage 5.</p> | <p>Morpeth to Felton and Alnwick to Ellingham (DS4): £68m of journey time benefit generated from Stage 32 analysis. The majority is generated by improvements to journey time between 0 and 5 minutes for Commute, Business and Other.</p> |

Outline Business Case

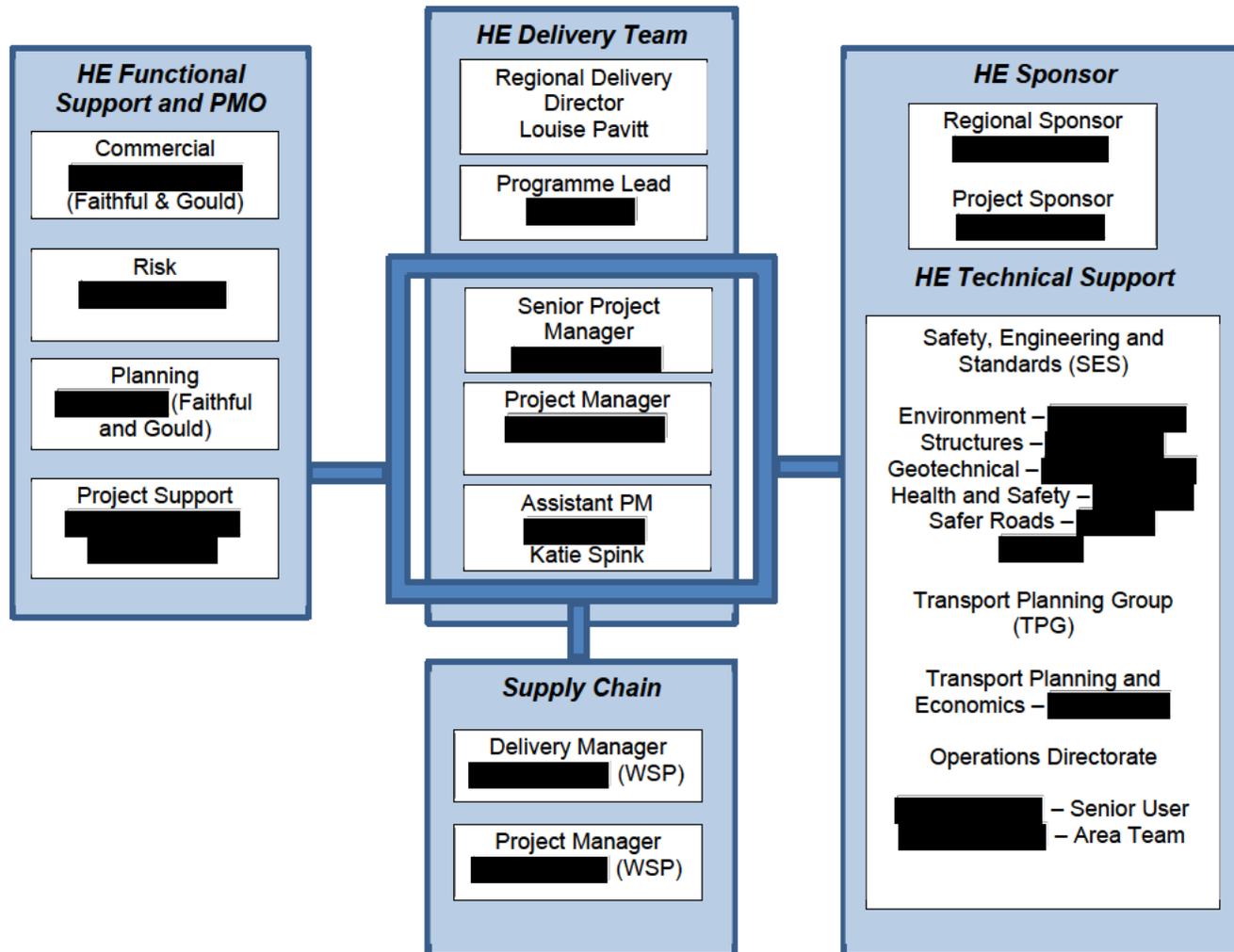
| | | | | |
|--|--|--|--|--|
| <p>A well maintained and resilient network</p> | <p>Pavement condition Target: Achieve 95% of road surface that does not require further investigation for possible maintenance for years 1 and 2 of RP2, based on the continuation of the current pavement metric. Target for years 3 onwards will be based on the concept of road surface in good condition and determined through parallel running using the new metric trialled in RP1.</p> | <ul style="list-style-type: none"> Structures condition: average structural condition; critical element condition; and structural condition Index. Technology availability: percentage of time roadside assets are available and functioning. Drainage condition: measure of percentage of carriageway that does not have an observed significant susceptibility to flooding. From 2024/25 it is intended that this metric will be weather normalised. Geotechnical condition: percentage length of asset in good condition. | <p>The new pavement design has a 40-year design life in accordance with DMRB. The design of the existing pavement to be upgraded to 40 year design life. The detrunked section may have the lower 10yr design life.</p> <p>The existing A1 has several flooding hotspots, with 46% of the current road that does not have an observed significant susceptibility to flooding. As the new road will have new drainage at both the online and offline sections there will be 100% that does not have an observed significant susceptibility to flooding.</p> | <p>Offline new pavement of 410,700m² will be designed to 40yr design life. The 168,200m² existing pavement being widened will be upgraded using treatments to bring that pavement up to a comparable 40 year design life, to match the new build. The 65,000m² detrunked section may have the lower 10yr design life.</p> |
| <p>Being environmentally responsible</p> | <p>Noise Target: 7,500 households in Noise Important Areas mitigated using funding from the Environment and Wellbeing designated fund during RP2.</p> | <ul style="list-style-type: none"> Supply Chain Carbon emissions: emissions from Highways England's contractors (including embodied carbon from construction) per million pounds spent. Condition of Cultural Heritage assets: aggregate 'quality score' of Highways England's Cultural Heritage assets. Water Quality: length of watercourse enhanced through the mitigation of medium, high, and very high-risk outfalls as well as through other enhancements, for example river retraining/rewilding Litter: percentage of the SRN where litter is graded at B or above under the Litter Code of Practice. | <p>Morpeth to Felton (DS2): Currently 2 NIAs within the project extent, improvement at 1 and worsening at the other (NIA 10003). The updated DMRD sensitivity test outputs at NIA 10003, affecting 3 dwellings, had the potential to have a slight-adverse impact however this is mitigated by the installation of the 70mtr long 3mtr high sound barrier. No NIAs Alnwick to Ellingham. As above Morpeth to Felton.</p> | <p>75 dwellings with an increase in noise level during the day. 56 dwellings with an increase in noise level at night. 64 dwellings with a decrease in noise level during the day. 48 dwellings with a decrease in noise level at night.</p> |
| <p>Being environmentally responsible</p> | <p>Biodiversity Target: Achieve No Net Loss of biodiversity over the whole Highways England soft estate by the end of RP2.</p> | <ul style="list-style-type: none"> Supply Chain Carbon emissions: emissions from Highways England's contractors (including embodied carbon from construction) per million pounds spent. Condition of Cultural Heritage assets: aggregate 'quality score' of Highways England's Cultural Heritage assets. | <p>Construction of River Coquet Bridge requires the felling of SSSI Ancient Woodland. The inclusion of footways, cycleway and bus stops and align with sustainable and integrated transport objectives.</p> | <p>Replantation strategy at a ratio of 12:1 is to be implemented to counteract the impact and support the 'no-net loss' initiative.</p> |

| | | | | |
|-----------------------------------|---|--|---|--|
| | | <ul style="list-style-type: none"> • Water Quality: length of watercourse enhanced through the mitigation of medium, high, and very high-risk outfalls as well as through other enhancements, for example river retraining/rewilding • Litter: percentage of the SRN where litter is graded at B or above under the Litter Code of Practice. | | |
| Being environmentally responsible | <p>Air quality target: Bring links agreed with the Department and based on the Pollution Control Mapping model into compliance with legal NO₂ limits in the shortest possible time.</p> <p>Highways England carbon emissions Target: Reduce Highways England's carbon emissions as a result of electricity consumption, fuel use and other day-to-day operational activities during RP2, to levels defined by baselining and target setting activities in 2020-21.</p> | <ul style="list-style-type: none"> • Supply Chain Carbon emissions: emissions from Highways England's contractors (including embodied carbon from construction) per million pounds spent. • Condition of Cultural Heritage assets: aggregate 'quality score' of Highways England's Cultural Heritage assets. • Water Quality: length of watercourse enhanced through the mitigation of medium, high, and very high-risk outfalls as well as through other enhancements, for example river retraining/rewilding • Litter: percentage of the SRN where litter is graded at B or above under the Litter Code of Practice. | All Air Quality receptors will be below Air Quality Objectives for NO ₂ and PM ₁₀ . | No significant impact on air quality |
| Meeting the needs of all users | <p>Road user satisfaction Target: Achieve an 82% road user satisfaction score in 2020-21 and 2021-22, with year on year increases in following years.</p> <p>Roadworks information timeliness and accuracy</p> | <ul style="list-style-type: none"> • Timeliness of information provided to road users through electronic signage: measured as the average time taken to set a signal. • Ride quality: metric to initially be a subset of the pavement condition metric which captures surface quality. Metric to be developed during years 1 and 2 of RP2, and be in place for year 3, in consultation with Transport Focus to provide a user-centric view of ride quality. | <p>The project team will work with the Roadworks and Asset Improvement Team to contribute to understanding of customer issues and improving customer satisfaction</p> <p>The project is in regular contact with the Local authority and has informed them of diversion routes. Also, all diversion routes have been driven by our designer and discussed and approved by Area 14.</p> | Re-alignment of local access roads to designated junctions removes right-hand turns directly onto the A1. These have historically proven to be dangerous and a cause of traffic collisions. Such redesigns remove the danger and is likely to improve road user satisfaction |

Outline Business Case

| | | | | |
|--------------------------------|---|---|---|--|
| | | <ul style="list-style-type: none"> Working with local highways authorities to review diversion routes for unplanned events. | | |
| Meeting the needs of all users | <p>Roadworks information timeliness and accuracy</p> <p>Target: Achieve 90% accuracy of roadworks information seven days in advance of works by 2024-25, with an increasing trajectory of improvement through RP2 from the level of performance achieved by the end of RP1.</p> | <ul style="list-style-type: none"> Timeliness of information provided to road users through electronic signage: measured as the average time taken to set a signal. Ride quality: metric to initially be a subset of the pavement condition metric which captures surface quality. Metric to be developed during years 1 and 2 of RP2, and be in place for year 3, in consultation with Transport Focus to provide a user-centric view of ride quality. Working with local highways authorities to review diversion routes for unplanned events. | <p>Roadside signage will be used to provide advance notice of intended works. This may be in the form of static signs or mobile variable message signs (VMS). Northumberland County Council will be consulted on the diversion routes. Engagement with the local and wider community, including businesses.</p> | <p>Not known at this time but the quantity of signage needed will be review in the stage 5 traffic management plan and included in our customer plan.</p> |
| Achieving efficient delivery | <p>Total efficiency</p> <p>Target: Evidence the efficiency target of £2.304bn capital and operational expenditure is demonstrated by the end of RP2.</p> | <ul style="list-style-type: none"> Earned value metrics for projects in construction Cost Performance Index: this is commonly used in the construction industry as a measure of earned value. It is the ratio of budgeted cost of work performed to date to actual cost to date. Schedule Performance Index: this is commonly used in the construction industry to measure progress against the agreed schedule. It measures the ratio of value actually delivered (budgeted cost of work performed to date) to value scheduled to be delivered to date. | <p>The project has an efficiency register has been developed during PCF Stage 3 the project efficiency target is £4.2m.</p> | <p>£1.4m efficiencies have been realised to date and £24.4m of opportunities are expected to be realised during construction. A key efficiency being around pavement. The register is reviewed monthly and assured by RIP Commercial and Programme Office.</p> |

7.5 Annex E – Organogram



8. Next steps

8.1 Integrated Assurance - supporting decision making

The business case is to be confirmed as consistent, a coherent picture of activity across the company and has undertaken the required stage gate Independent Assurance Review (IAR).

| Name | Role | Date | Version |
|------|--|------|---------|
| | Programme Assurance Division | | |

I confirm this business case has been subject to suitable independent assurance to allow it to proceed to the next approval decision stage in the project lifecycle.
(Add any required SHARE links)

8.2 Confirmation of investment decision approval

Complete the business case approval box on the front page of your document.

Action required: PDF your business case and save a record in SHARE.

[A] Associated governance approvals

The following links access the company's policy or guidance about:

| | | | |
|--|------------------------------|-----------------------------|------------------------------|
| Cabinet Office Controls | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Consultancy approvals procedure | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| 3rd party contractor (also known as Technical Service) approvals | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |

[B] Confirmation of legislative/policy compliance or related considerations

| | | | |
|--|------------------------------|-----------------------------|------------------------------|
| Have health, safety and wellbeing issues been considered? <i>(see 2.4.2 of the business case guidance)</i> | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Have equality/diversity/inclusion issues been considered? <i>(see 2.4.2 of the business case guidance)</i> | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Have environmental issues been considered? <i>(see 2.4.2 of the business case guidance)</i> | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Has the General Counsel team concurrence been obtained for any legal services /advice requirements? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Have IT issues been considered? <i>(see Annex B of the business case guidance)</i> and has the Chief Information Officer concurrence been obtained for any proposal with IT? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Has the Director of Estates & Facilities concurrence been obtained for any proposal impacting on estates and facilities? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Has the Balanced Scorecard approach been applied into the procurement process, for activities in excess of £10m? <i>(see 4.3 of the business case guidance)</i> | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Have all technical approvals be given? If not, why not? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Comments: | | | |
| Has HR concurrence been obtained along with the consideration for people numbers, location or terms & conditions? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |

[C] Highway, estates or property and compensation related considerations

Readiness for Development Consent Order application / draft Orders submission:

| | | | |
|--|------------------------------|-----------------------------|------------------------------|
| | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
|--|------------------------------|-----------------------------|------------------------------|

| | | | |
|---|------------------------------|-----------------------------|------------------------------|
| For DCOs, has the National Networks National Policy Statement been taken into account through completion of an accordance report / table, with any risks being escalated? | Summary of evidence: | | |
| Are all the documents for the relevant orders (a DCO or orders under the Highways Act 1980 along with any associated Compulsory Purchase Orders) signed-off and ready in the right formats, and – for DCOs – has a Section 55 checklist been completed and the application fee raised”? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |

Highway, estates or property information to confirm before the start of work

| | | | |
|---|------------------------------|-----------------------------|------------------------------|
| Is entry available to all estate/property for the project? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |
| Have powers of compulsory purchase or agreements to acquire and / or access been obtained over all land or property for the project? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |
| Have the relevant orders (a DCO or orders under the Highways Act 1980 along with any associated Compulsory Purchase Orders) been made? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |
| For DCOs, have all the pre-commencement requirements been discharged, and any related processes (for example consultation and publicity) completed? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| Has the High Court Challenge period expired with no challenges received? Clarify if there are challenges received that need to be dealt with. | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |
| Have all Road Traffic Regulation Orders been made? If not, why not? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |
| Do you have landlord’s agreement for the required changes? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |
| Do you have planning permission for the required changes? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> |
| | Summary of evidence: | | |

[D] Transactional information

| | |
|---|--|
| Project Identification Number (PIN) | |
| Expenditure type(s) | |
| Funding directorate (s) | |
| Budget transfers or cross-organisational funding | |
| Third party contributions (external to the company) | |
| Division / team / cost centre | |
| Project Manager, telephone | |
| Finance Business Partner | |

Complete the following details for an agreement request:

| | | |
|--|--|------------------|
| Agreement request | New request/Revision delete as appropriate | |
| Agreement number (for revision only) | | |
| Contract value | | |
| If your chosen supplier is not currently on pFp, please contact the Supplier File Inbox for advice regarding setting up new suppliers. | | |
| Supplier name: | | |
| Supplier number and supplier site: | | |
| Contract description | | |
| Service/contract to commence by (date) | | |
| Service/contract to finish by (date) | | |
| Contract type: | Choose an item. | |
| Line item and category Item and category list <i>*optional field other than for certificate agreements. If the amount remains blank Purchase Orders will validate against the overall agreement value. If an amount is entered pFp will cap the spend against the line at that value. Any changes to the value will need to be agreed with Procurement.</i> | Item and category 1 | |
| | | |
| | Amount* | Line description |
| | | |
| | Item and category 2 | |
| | | |
| | Amount* | Line description |
| | | |
| | Item and category 3 | |
| | | |
| Amount* | Line description | |
| | | |

| | |
|--|-----------------|
| Record of contractual pFp actions (procurement use only) | |
| Ensure there are no other agreements setup for this, or that it isn't part of another framework. | |
| Procurement Officer: | |
| Contractual approver: | |
| Agreement number | |
| Date setup on pFp | |
| Recorded on e-PIMS | Choose an item. |

Over £50m business case publication (at full business case stage)

Consultation with the Highways England digital communications team has been completed and the required publishing of this business case on gov.uk is planned for [date].